AUGUST 1958

A Buttenheim Publication

Contractors and Engineers

magazine of modern construction

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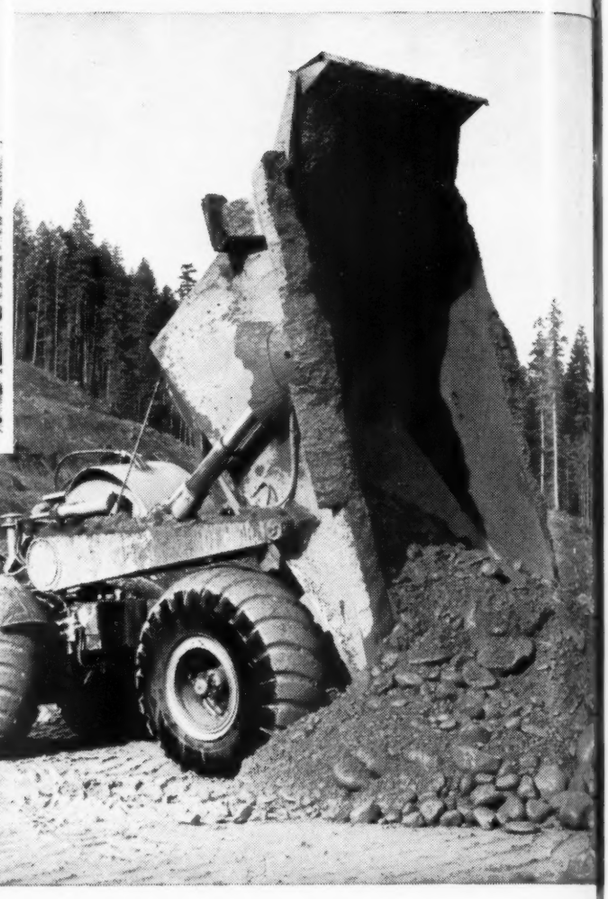

Athey-CAT HAULERS

take Oregon's mountain rock and river mud in stride on Hills Creek Reservoir and Dam Project

The Hills Creek Reservoir and Dam project at Oakridge, Oregon has 3 goals: (1) to control seasonal flooding of the lower Willamette Valley, (2) provide electric power, (3) create a large lake for recreation facilities. Contractor on the job is Green Construction and Tecon Corp. of Oakridge.

Three Athey-Cat Rear Dump Units take the rough work in their stride. The narrow cut and roadways need the Athey-Cat's ability to make short turns and dump fast and clean. The units have excellent traction and roadability for the slippery haul roads – even in the river bottom when necessary.

Haul length is 1½ miles – material is earth and rock – haul road conditions vary from river bottom mud to rock. Howard Flake, Superintendent of Repair and Service, says, "The Athey-Cat DW21-PR21 Rear Dump Units are doing an excellent job."

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magazine of modern construction

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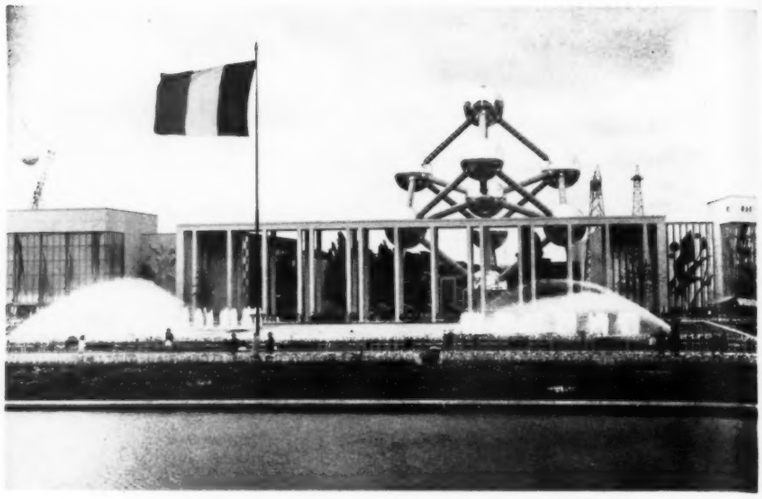
Editorial

Missing the boat at the Fair



A group of American businessmen, contractors, and engineers—representatives from the construction industry—recently visited the United States Pavilion at the Brussels World Exhibition. An informal poll of these technical men and their wives indicated a strong feeling that we had definitely underplayed our accomplishments in the American display at this first world's fair since the war. Everyone agreed that the circular U. S. Pavilion was an outstanding piece of architecture, but after that unanimous opinion was delivered, criticism began.

Practical construction men asked why valuable interior space was devoted to a pool of water at the center of the building. One suggested that the open roof over the pool might better be closed, since it rains 250 days of the year in Belgium, and the floor area below given over to a display of construction machinery. The pool now contains a platform for a fashion display which represents what our garment industry produces. But in this era where emphasis is placed on technological achievements, for what scientists hope is the advancement of humanity, the U. S. Pavilion offers nothing to show what the construction industry has accomplished in the immediate past, or what it may hope to do in the future.

In different ways, each of the 43 countries at the Fair seeks to reflect its image with its exhibition. That is why American visitors to Brussels grumble at such displays in the U. S. Pavilion as a box containing three stalks of tumbleweed, a chunk of driftwood, or abstract art in painting and sculpture which seems completely lost on the great majority of fair-goers. And the dissatisfaction mounts when the American visits the neighboring Soviet Pavilion to see the widespread interest generated by the outdoor exhibit of modern Russian coal-mining, oil-well-drilling and earthmoving equipment.

American private enterprise, however, is overcoming this lack of recognition of the construction industry on the part of the U. S. Commission to the Brussels Fair. The Euclid Division of General Motors (see p. 6) has two of its big earthmovers—twin-engine scraper and tractor—on display at the Civil Engineering exhibit in the Belgian section. GM also is exhibiting in the Land Transport Exhibit, Belgian section, a moving diorama which shows how the coming of a highway affects the development of a country. Here is an exhibit that could be offered to advantage in the U. S. Pavilion, for it presents a graphic picture of the growth of America through highway transport.

Incidentally, this display contains nary a commercial plug for any product or company. It shows a giant model of a landscape with a road passing through a village. As the road is improved, the village expands, industry is attracted to the area, and new buildings and facilities are developed. All this is done by shifting sections of the scenery. While the growth continues until the entire area has been altered, visitors grouped around the exhibit get a running commentary through individual earphones in a choice of four languages.

This diorama is an accurate representation of how new and modern highways can promote the economic well-being not only of the U.S.A. but of any country with a well planned highway program. Americans have always excelled in mechanical displays, which is why our citizens touring Europe feel frustrated when they see how the U. S. Pavilion at Brussels neglects our industrial and technical achievements for grotesque murals, meaningless mobiles, and models in fur coats. No one would advocate our presenting anything like a road show or materials exhibit. But we could have let all nations know, through this international exposition, what our construction industry has accomplished and what other countries might accomplish through their own similar industries in the years ahead.

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Editor • William H. Quirk
Field Editors • Ralph Monson, Anthony N. Mavroudis, William A. Allen
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A Robbins RR10 rotary drill makes a fast job of sinking 9-inch-diameter and 20-foot-deep blast holes in this 1,400,000-yard rock cut on the Cincinnati-Conneaut Freeway in Ohio. The rig is helping make it possible for up to 21,000 yards of material to be moved daily. *Page 40*

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High-strength steel featured in unique Fort Pitt Bridge

A 74-ton, 50-foot-long USS Man-Ten high-strength steel bridge section is inches away from closing the arch on the Fort Pitt Bridge, near Pittsburgh's Golden Triangle. This is the only double-deck bridge in the world using box sections as arch ribs and with the tied arch using trusses instead of girders as ties.

Featuring a profile of high-strength steel, the new Fort Pitt Bridge across the Monongahela River at Pittsburgh was designed using a combination of engineering principles that make it the only span of its type in the world.

To span the entire width of the river in compliance with navigation requirements and achieve aesthetic appeal, designers selected a double-deck, tied-arch structure. The bridge will carry four lanes of one-way traffic on each level. The span will be the only double-deck bridge using box sections as arch ribs and with the tied arch using trusses instead of girders as ties.

Test model

At one stage of design and planning, structural engineers on the staff of George S. Richardson, consulting engineer for the Pennsylvania Department of Highways, conducted tests and analyses to determine the stress pattern of the bridge.

A 100 to 1 scale steel model was built and tested at the Thayer School of Engineering of Dartmouth College. Strains were measured by SR-4 electronic strain gages and deflections were measured by Ames dials. As a result of the model tests and other studies, it was determined that a multiple indeterminate analysis was necessary.

Determine Stresses

In general, the engineers sought to determine stresses roughly equivalent to those present in an archer's bow. In a tied-arch bridge design, the roadway truss acts as the bowstring to hold the "bow" section of the bridge arched and properly distribute loads and stresses.

The final design called for solving 15 simultaneous equations, 14 for hanger points and the last for horizontal continuity. With design requirements resolved, high-strength steel answered the problem of getting more stress per dollar where stronger steel was needed. Specifications called for high-strength steel components in more than two-thirds of the 750-foot span's total weight of 8,500 tons of fabricated steel.

In fabricating and erecting the Fort Pitt Bridge, American Bridge Division used USS Man-Ten steel in all portal members, including end-floor beams, all chords, and most diagonals and verticals. THE END

Which Asphalt pavement for your traffic?

Laying a heavy-duty plant-mixed Texaco Asphaltic Concrete pavement on busy Fall Creek Parkway in Indianapolis. Contractor—Grady Brothers of Indianapolis.

An economical road-mixed type of Texaco Asphalt surface is adequate for traffic on this street in North Vernon, Ind. Contractor—Arl Doty of North Vernon.

These two Indiana cities had different paving problems. Indianapolis needed a heavy-duty pavement for an important, heavily traveled parkway. North Vernon needed a more economical type of surface for a street serving relatively light traffic.

In each case, there is a type of Texaco Asphalt construction exactly suited in both durability and cost to traffic conditions. The Indianapolis parkway was given a heavy-duty plant-mixed Texaco Asphaltic Concrete pavement, which combines low upkeep cost with rugged durability. The North Vernon street received an economical road-mixed type of surface, for which Texaco Medium-curing Cutback Asphalt and gravel were mixed by power grader, spread and compacted.

These are two of a number of ways in which Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils are used in paving streets, highways, airports and parking areas. Helpful information on the methods and materials recommended for all of these types is supplied in two free Texaco booklets. You can obtain copies of these publications without obligation by writing our nearest office.

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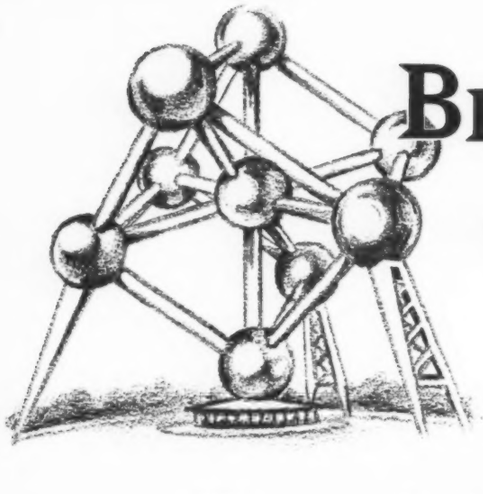
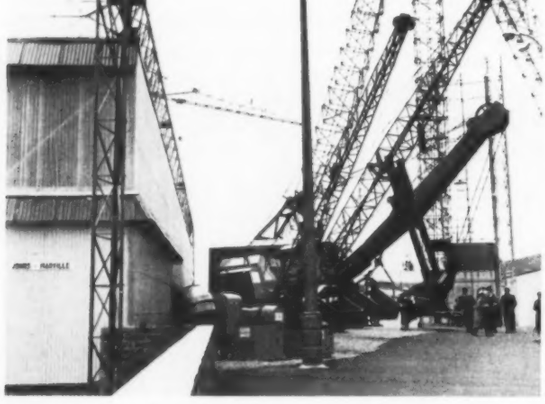
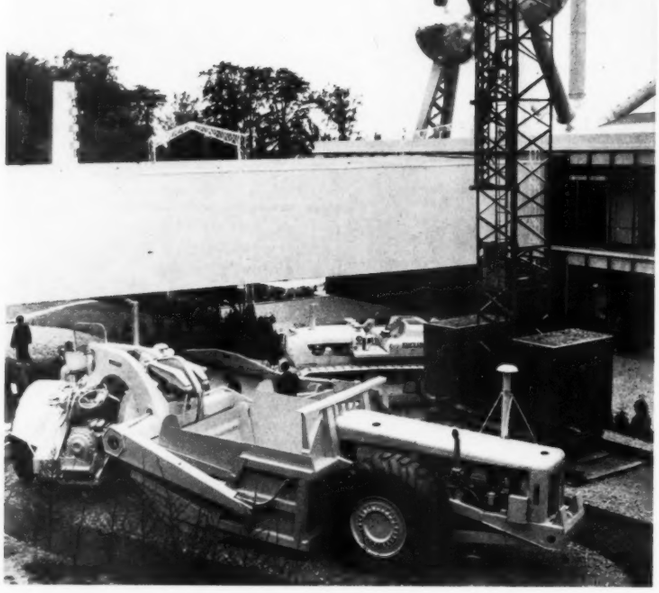


Brussels Fair

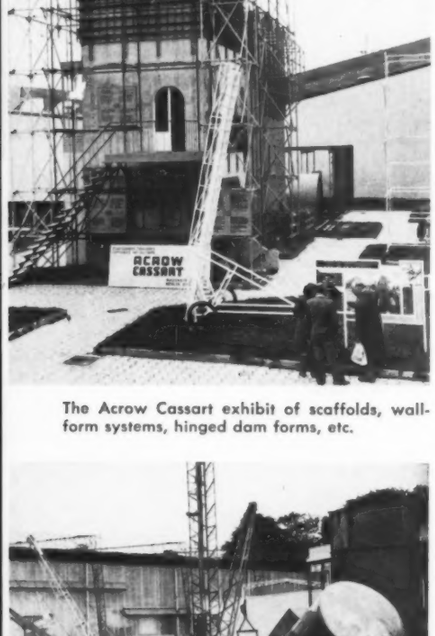
exhibits construction machinery



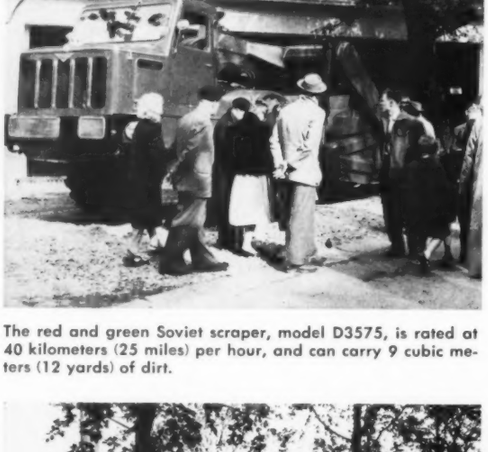
Three Metaalwerk Boom shovels rated from one-ton capacity and up. Unique construction of building at left has exterior framework. The siding is Johns-Manville.



American earthmovers are represented by Euclid's TS-24 twin power scraper and the TC-12 twin power crawler tractor. The scraper has a heaped capacity of 20.6 cubic meters (27 cu. yds.) or 40 tons of dirt.

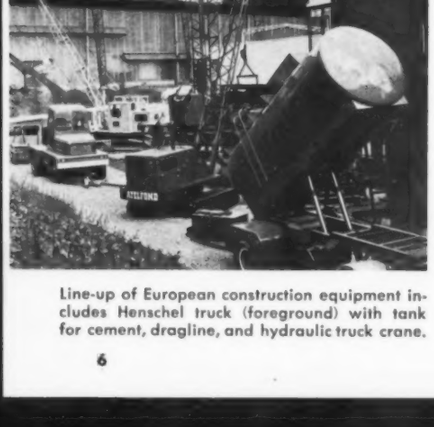


The Acrow Cassart exhibit of scaffolds, wall-form systems, hinged dam forms, etc.

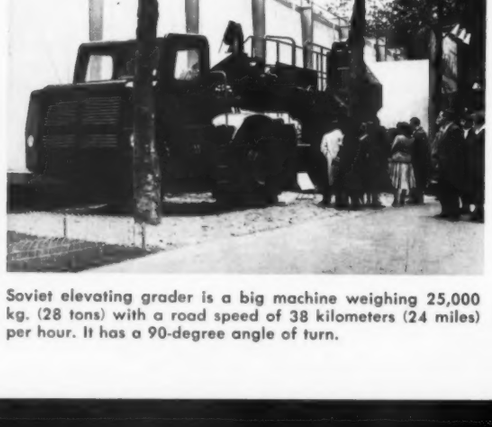


The red and green Soviet scraper, model D3575, is rated at 40 kilometers (25 miles) per hour, and can carry 9 cubic meters (12 yards) of dirt.

USSR truck, powered by a 12-cylinder diesel, has a 40-ton capacity carrying 22 cubic meters (29 cu. yds.). Visitor to the Fair is getting a worm's-eye view of the big rig.



Line-up of European construction equipment includes Henschel truck (foreground) with tank for cement, dragline, and hydraulic truck crane.



Soviet elevating grader is a big machine weighing 25,000 kg. (28 tons) with a road speed of 38 kilometers (24 miles) per hour. It has a 90-degree angle of turn.

The Russian-built motor grader weighs 16,000 kg. (18 tons) and is operated at speeds ranging from 3 to 30 kilometers (2 to 19 miles) per hour.

U.S.A., Belgian, and U.S.S.R. earthmovers and excavators get audience attention at 1958 World Exhibition

by WILLIAM H. QUIRK
editor

The Euclid exhibit shows the 436-hp TC-12 twin power crawler tractor and TS-24 twin power scraper.

Although occupying only a tiny portion of the 435-acre site that is the 1958 Brussels World Exhibition, the construction machinery on display is getting its share of fair-goers' attention.

Most of the equipment is shown as part of the Civil Engineering exhibit in the Belgian section. This is an outdoor display, compressed into a small area bordering on Construction Avenue, and limited to the space between the pavilions of the Building and Housing exhibit. The lack of space accounts no doubt for the comparatively small showing of equipment and construction supplies. Visitors from the U.S.A., recalling the last world's fair held in Flushing, N. Y., in 1939 on grounds that totaled 1,257 acres, could appreciate Belgium's problem of squeezing its exhibition into an area about one-third the size of the New York fair. The U.S.S.R. placed its construction machinery units around its own pavilion.

Euclid display

This country has but one earthmoving firm represented at the exposition—the Euclid Division of General Motors Corp. Euclid's display near the Civil Engineering area has no connection with the U.S. Pavilion, nearly half a mile away. Euclid is showing its twin power scraper, Model TS-24, which has a heaped capacity of 20.6 cubic meters (27 yards) or 40 tons of dirt, and its twin power crawler tractor, Model TC-12, which has a 436 horsepower rating. Written on the dozer blade of the latter greenish-yellow giant is the message: "Euclids move the earth".

Acrow Engineers Ltd. of London, England, is exhibiting its complete line of scaffolds, wall-form systems, hinged dam forms, concrete road forms, clamps, props, and trench struts. The exhibit is known as Acrow Cassart, the latter a local affiliation, and includes a small structure that was practically assembled from the firm's products.

Franki piles, also well known in this country, have an indoor display in the Building and Housing exhibit.

Excavators are represented by three sizes of Belgium's Metaalwerk Boom shovels with buckets rated from 1 ton and higher; an Atelford dragline; and a L'Infatigable Werkhuizen hydraulic truck crane with clamshell bucket. A Weitz slewing crane from Bouffioulx-lez-Charleroi, used in building construction, towers over the earthmoving equipment. A ciment en vrac, or bulk cement tank mounted on a Henschel truck, rounds out the construction machinery exhibit.

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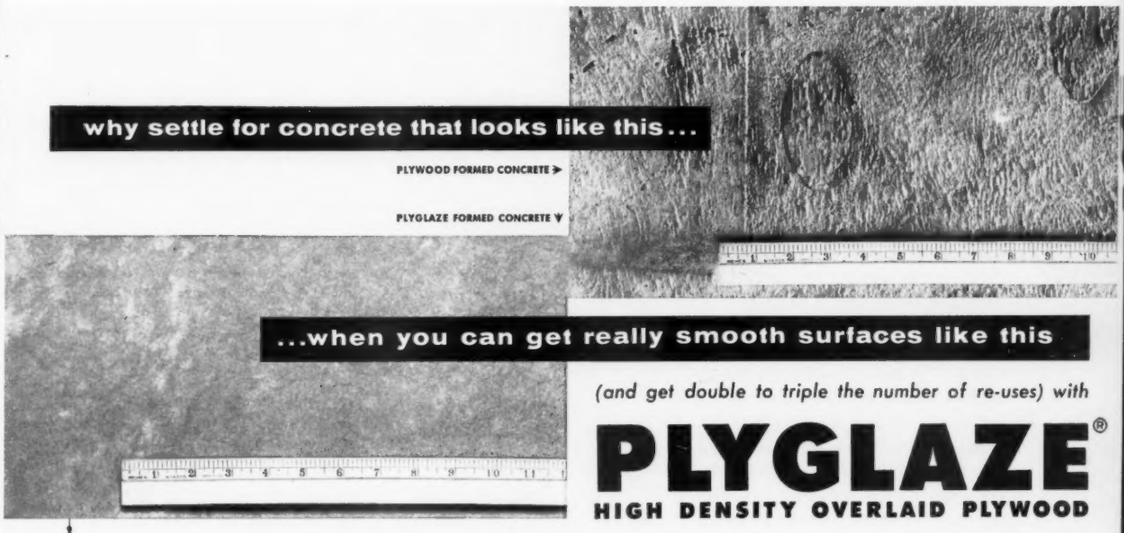
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...when you can get really smooth surfaces like this

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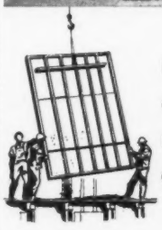

If you have a job that calls for smooth architectural concrete—or if you can design forms to get 25 or more pours on the same or subsequent jobs—you can save money, time and trouble with PlyGlaze.

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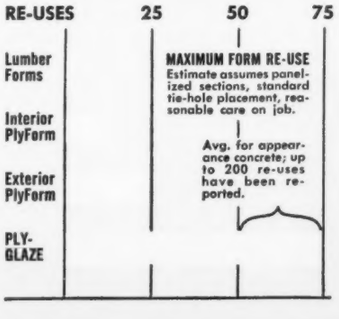
PlyGlaze's hard, glossy-smooth surfaces form really smooth concrete every-time—unmarred by grain pattern, checks or plywood patches.

For jobs where architectural concrete is specified you can eliminate almost all rubbing and grinding, except for fins and tie holes. Ceiling slabs can be painted direct, without expensive plastering.

GIVES UP TO 200 RE-USES—With reasonable care, you should get from 50 to 75 re-uses with PlyGlaze. The limit actually depends on the form design and job requirements. Contractors who use panelized form sections with standardized tie-hole placements have reported getting several hundred re-uses.



CUTS COSTS—Although PlyGlaze does cost more initially than PlyForm grade Exterior plywood, it actually saves you money in the long run for these reasons:

1. PlyGlaze formed concrete needs much less finishing or sacking.
2. Oiling is not needed between pours other than to facilitate cleaning.
3. On jobs where form costs can be amortized over 25 or more pours, PlyGlaze actually costs less per foot of concrete formed.

COST PER-SQUARE-FOOT-PER-USE*

No. Re-Uses	10	25	50	100
PLYGLAZE	.037	.015	.007	.004
Exterior PLYFORM	.020	.008	Gives Max. 25 re-uses	

*Based on the average prices quoted by St. Paul & Tacoma Lumber Co. during 1957 for the following material delivered in Chicago: ¾" PlyGlaze, ¾" PlyForm, oiled, edge sealed.

SPECIFICATIONS, AVAILABILITY

Material: PlyGlaze is made by fusing a hard, glossy phenolic resin fiber to both sides of Exterior plywood. The overlay is not simply a coating that can work loose; it is fused under heat and pressure to become an actual part of the panel. It is more durable in every way than the wood itself.

Base panel is top quality DFPA-inspected solid core Exterior plywood. It is sanded *before* overlay is applied, assuring uniform thickness.

Sizes: (standard and custom) PlyGlaze is available in all standard plywood sizes and also can be custom-sized to your exact specifications.

Source of supply: PlyGlaze is available anywhere in the country; write for name of nearest representative. It can also be specified in lieu of ordinary plywood with most patented forming systems.

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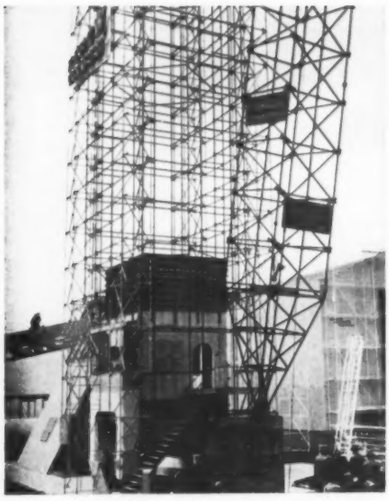


Acrow Cassart built on its exhibit area a two-story headquarters, using its own forms and hardware.

(*Continued from preceding page*)

One of the pavilions of the Building and Housing exhibit, adjoining the equipment display, is of unique construction with an exterior framework. The walls of this "inside-out" building are of Johns-Manville siding.

U.S.S.R. equipment

Around the outside of the Soviet Union Pavilion, 500 feet long×240 feet wide, are exhibits of U.S.S.R. coal-mining machinery, oil-well drilling rigs, and earthmoving equipment. The latter includes a rear-dump truck, an elevating grader, a self-propelled scraper, and a motor grader.

The end-dump truck, Model MAZ-530, has a 40-ton capacity and is powered by a 12-cylinder diesel engine. Painted a deep maroon, the truck has a body rated at 22 cubic meters or 29 yards.

The elevating grader, Model D369, is a big machine weighing 25,000 kilograms (28 tons). A pivot support behind the front driving wheels, which also supports the overhanging engine and driver's cab, permits a sharp 90-degree turn. This rig has a road speed of 38 kilometers (24 mph).

Russia's motorized scraper, D3575, painted colorfully in red, green, and yellow, has a capacity of 9 cubic meters (12 yards) and a speed of 40 kilometers (25 mph).

A giant yellow-painted motor grader, D395, weighs 16,000 kilograms (18 tons) and has a speed rating of 3 to 30 kilometers (2 to 19 mph).

Incidentally, all these machines bear cards marked URSS, rather than USSR which everyone recognizes as the abbreviation for Union of Soviet Socialist Republics. In the French language, however, the abbreviation for the Soviet Union is URSS.

Lack of attendants

While visitors to the Fair displayed a keen interest in the construction machinery, they were frustrated in attempts to get details of the equipment being exhibited. If any attendants had been assigned to the construction displays, they were conspicuous by their absence. The general observation applied not to one country's or firm's exhibit but to all. Another criticism expressed was the lack of available information in various languages for posting at the machinery displays. At an international fair of this type, visitors come from all over the world. It cannot be assumed that these people are skilled in many tongues, yet the identifying data on the machines is given in but a single language, usually either French or English.

The language barrier is particularly noticeable in the Civil Engineering exhibit. This is in the Belgian section, and the displays were prepared by the Belgian Civil Engineering Association. Posted information in this pavilion is either in French or Flemish, the official languages of the country. Consequently, visitors of other nationalities are at a disadvantage in getting a true comprehension, for instance, of the materials or equipment being shown.

THE END

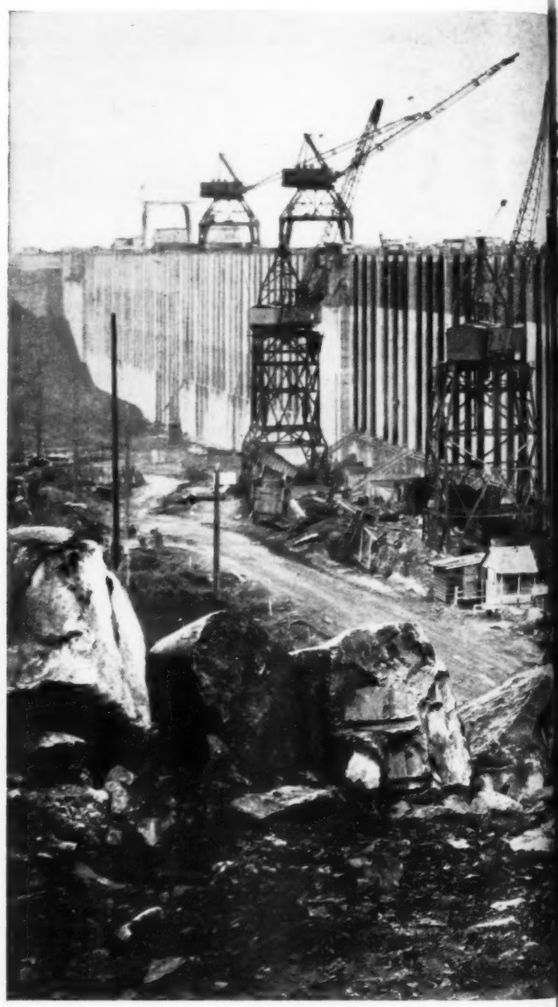
Joy elects directors

Joy Mfg. Co., Pittsburgh, Pa., has elected George E. Clark a director of the company. J. Evans Rose has also been elected a director and general counsel. L. F. Rains has retired as chairman of the executive committee, but continues as a director.

Bethlehem to open second New York City office

Bethlehem Steel Co., Bethlehem, Pa., has leased two entire floors in a 38-story skyscraper at 375 Park Ave., New York City. The new space will house the firm's New York district sales department, engineering and estimating department, the New York erection department, and offices for the use of visiting management. Over 26,000 square feet of floor space will be occupied by the firm when it moves in, in December.

The company's general New York offices will remain at 25 Broadway.



AN ESTIMATED 73% of the petroleum requirements on major St. Lawrence Seaway projects have been supplied by Texaco. Picture shows Bill Partisch (left), Texaco Lubrication Engineer, and Vic Pandolfi, Equipment Superintendent, discussing the Texaco Lube Plan, represented by the numbered barrels. In background, upstream side of Barnhart Island Power Dam and Robert E. Saunders Generating Station designed to generate 1,880,000 kilowatts. Construction of the 3,230-ft. wide, 167-ft. high concrete gravity dam involved excavation of more than 2,500,000 cu. yds. of earth and placing of approximately 2,000,000 cu. yds. of concrete. Dam is a joint project of the Power Authority of the State of New York and the Hydro-Electric Commission of Ontario. Contractors for both U. S. and Canadian sides used Texaco lubricants and fuels, the Canadian contractors being supplied through McColl-Frontenac Oil Co., Ltd., Montreal, a Texaco subsidiary.

NO MORE THAN SIX SERVE ON

Texaco Plan reduces needed lubes to no more than six

MASSENA, N. Y.—Barnhart Island Power Dam is the world's second largest hydro electric project (first: Grand Coulee).

A Texaco lubrication plan and the service that makes it work are credited by the contractor's Equipment Superintendent with playing a significant role in keeping the contractors' equipment in an operating condition.

"The Texaco Lube Plan has really helped," says Victor Pandolfi, Equipment Superintendent for Perini, Walsh, Morrison, Kiewit, Utah Companies, General Contractors. "We've used no more than six high quality lubricants *for the entire project* instead of 15 or 20. There's been less inventory. It's been simpler to service and protect the equipment. We've avoided mistakes in lubrication, and saved manhours and money."

Most Contractors Use Plan

The Barnhart Island Power Dam is just one of the St. Lawrence Seaway projects on which the Texaco Simplified Lubrication Plan has been used. It's estimated that 73% of the petroleum requirements for the Seaway have been supplied by Texaco, and that most maintenance programs have included the Lube Plan.

The Plan has been endorsed for the following reasons: proper lubricants are recommended; less storage needed; reduced confusion and misapplication; lower handling and maintenance costs; less time lost by equipment; fewer lubricating errors; time and money saved.

Developed on the Job, For the Job

The Texaco Simplified Lubrication Plan was developed

Management

This is the thirty-third of a series of articles on Construction Management by George E. Deatherage, P. E., construction consultant. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by Geo. E. Deatherage & Son, Satsuma, Fla. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees who have reached the foreman level or its equivalent, and who need practical help in order to take complete charge of construction projects themselves.

Planning and production:

Checking the estimate

by **Geo. E. DEATHERAGE, P. E.**
construction consultant

The success of any construction project and any cost system depends on the estimator. The efficient estimator follows a definite system of taking off work and pricing it. He uses proper estimating forms and a standard set of construction accounts for each class of work.

Where the organization exists, the superintendent or project manager may delegate the work of checking the estimate to the standards and methods division or to some competent individual on the staff. The point is that it pays to make the check while there is time to do something about items estimated too low.

The person checking should be on the lookout for some elusive items that fall under job overhead, job charges, or special requirements as called for in the general conditions of the contract and specifications. If the estimator is competent, it may be unnecessary for the superintendent or project manager to check the estimate. But the contractor should give a copy of the estimate to both men, since they are held personally responsible for the success or failure of the work.

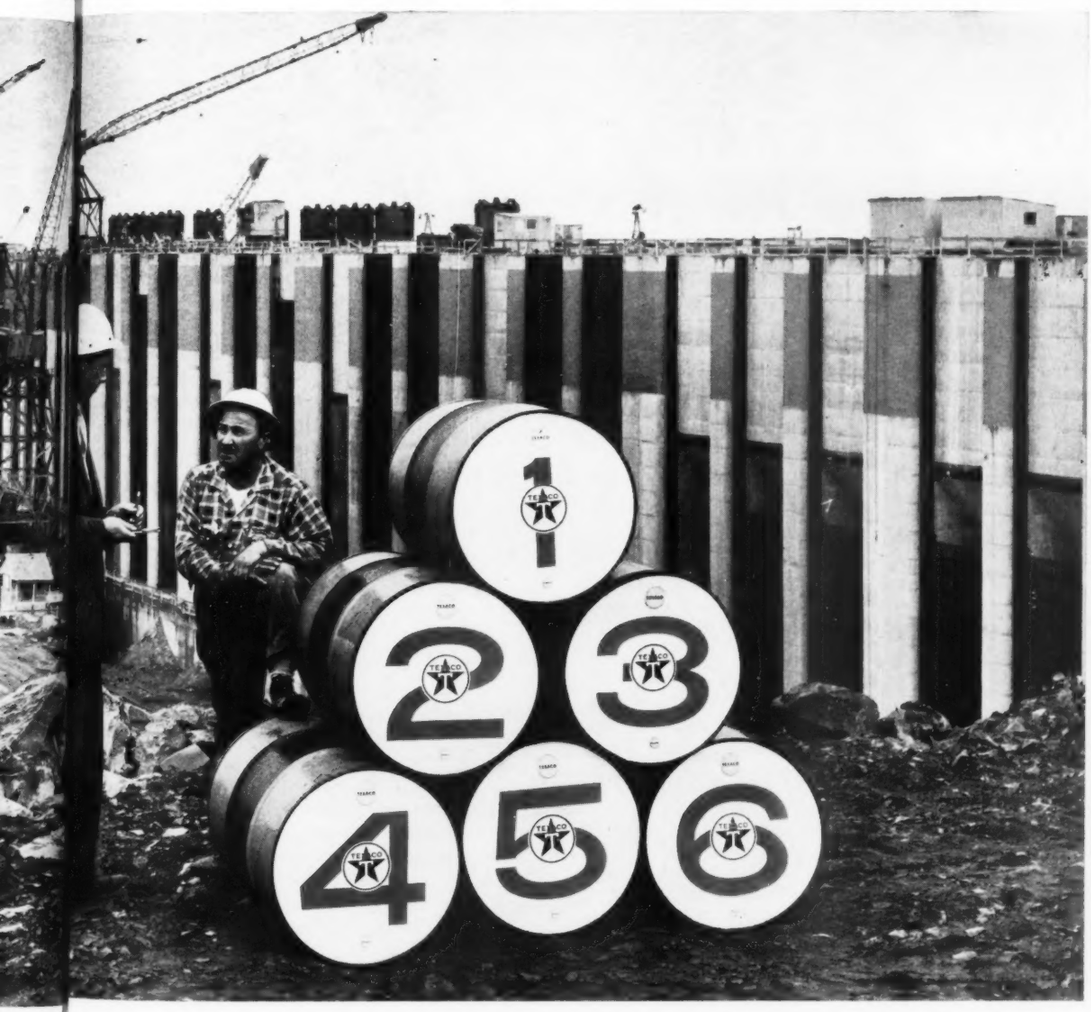
When going over the estimate, it is a good practice to prepare a check list. (See Figure 1, following page.) All items are listed on the extreme left-hand side of the sheet; then, in one vertical column to the right of the list, each item can be checked off as being required (check mark) or not needed (cross mark).

The man making the check can save a good deal of time and do a thorough job by referring to the contract, plans, and specifications.

Studying the contract

The first step is to become familiar with the plot plan, if one exists, paying particular attention to the layout for dimensions and directions. In effect, create a mental image of the finished job. The floor plan should be checked in detail and reconciled with the mental picture of the job.

Study the elevations at north, south, east, and west, referring back to the floor plans to get a clear picture of the job. Cross sections should also be studied one at a time, starting with



HE ST. LAWRENCE POWER DAM

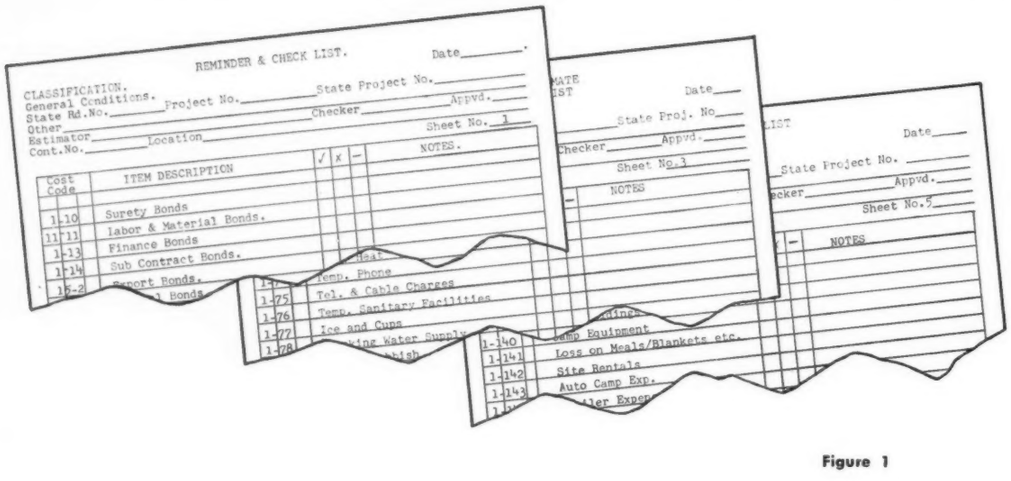
n on-the-job experience in all types of construction
k. It's tailor-made for the work to be done. Lubricants
vary from job to job because each Plan is set up to
t the specific needs of a specific project. But regardless
he job, the basic fact remains that—*no more than six*
icants are needed to handle all major lubrication.
ere are the six lubricants, illustrated above, used on
Barnhart Island project:
For engines: *Texaco Ursa Oil Super Duty Special;* **(2)**
chassis, wheel bearing and general grease lubrication:
aco Marfak Multi-Purpose 2; **(3)** for hydraulic units:
aco Regal Oil R&O; **(4)** for transmissions and differ-
als: *Texaco Universal Gear Lubricant EP;* **(5)** for wire
rope and open gears: *Texaco Crater;* **(6)** for enclosed reduction gears: *Texaco Gear Lube HD.*

Let a Texaco Lubrication Engineer work out a Simplified Lubrication Plan for your project. You'll save time, money and mistakes. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

For more facts, use Request Card at page 18 and circle No. 204


REMINDER & CHECK LIST. Date

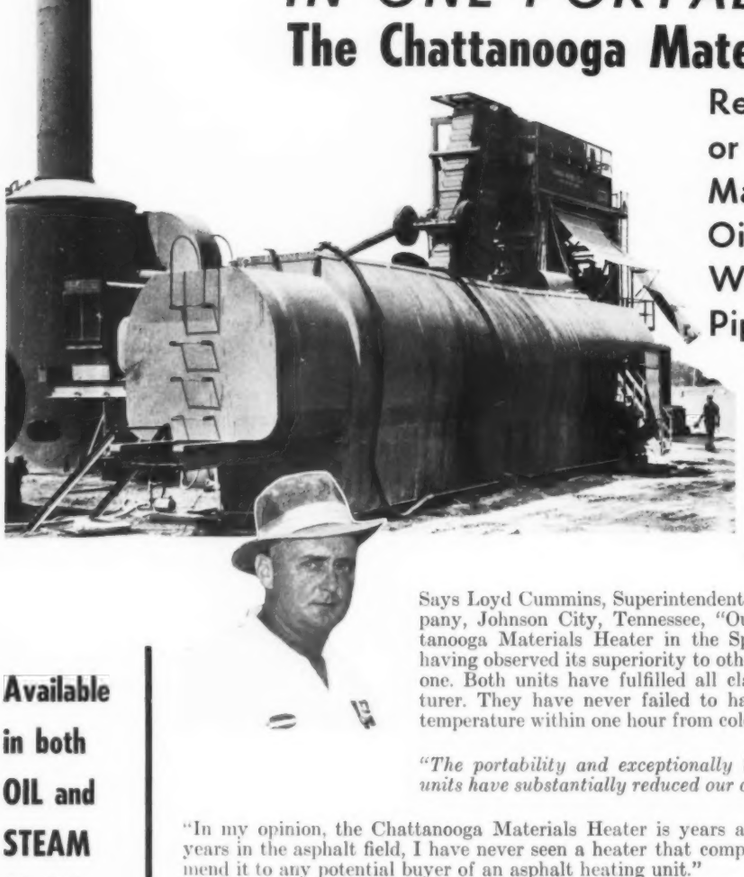
CLASSIFICATION. General Conditions. State Rd.No. Project No. State Project No. Other Estimator Location Checker Appvd. Cont.No. Sheet No. 1

Cost Code	ITEM DESCRIPTION	√	x	–	NOTES.
1-10	Surety Bonds				
11-11	Labor & Material Bonds.				
1-13	Finance Bonds				
1-14	Sub Contract Bonds.				
15-2	Export Bonds.				
1-75	Temp. Phone				
1-76	Tel. & Cable Charges				
1-77	Temp. Sanitary Facilities				
1-78	Ice and Cups				
1-140	Camp Equipment				
1-141	Loss on Meals/Blankets etc.				
1-142	Site Rentals				
1-143	Auto Camp Exp.				

Figure 1

IN ONE PORTABLE UNIT
The Chattanooga Materials Heater

Replaces a Boiler or Oil Heater, Material Tanks, Oil Tanks, Water Tanks, Piping and Pumps!



"Operating temperature within one hour from cold start . . ."

Says Loyd Cummins, Superintendent for the Unaka Paving Company, Johnson City, Tennessee, "Our company bought a Chattanooga Materials Heater in the Spring of 1955. A year later, having observed its superiority to other heaters, we bought another one. Both units have fulfilled all claims made by the manufacturer. They have never failed to have the asphalt at operating temperature within one hour from cold start.

"The portability and exceptionally low fuel consumption of the units have substantially reduced our operating costs.

"In my opinion, the Chattanooga Materials Heater is years ahead in design. After fifteen years in the asphalt field, I have never seen a heater that compares with it. I would recommend it to any potential buyer of an asphalt heating unit."

Available in both OIL and STEAM Models

Are *you* that satisfied with your present set-up? Waste no more of your time and dollars—write us for complete details. And, incidentally, *the price is right!*

Completely automatic in operation, the unit is also easy to repair—no special tools or know-how needed.

Disconnect asphalt, fuel oil, water and electric lines, hook to a tractor, and the move to a new job site is made in one haul.

INDUSTRIAL BOILER CO., Inc. P.O. Box 9133, Chattanooga, Tennessee

For more facts, use Request Card at page 18 and circle No. 205

(*Continued from preceding page*)

the over-all longitudinal sections and checking back to the floor plans and elevations to be sure that every point is understood. Know one section completely before moving on to study another. All details should be noted and located on the plans, elevations, and sections.

With the prepared check list in hand, read the contract documents, starting with the agreement and following with the general conditions and specifications. When going through the contract documents, check and identify all the job overhead requirements and, as each item presents itself, mark it off on the check list. This will indicate such items as bonds, insurance, permits, and watchmen, for which money must be provided in the estimate.

After reading the contract documents and specifications, mark off on the check list the items to be supplied. Up to this point only the overhead items that are called for in the contract documents have been identified and checked off.

But there may be more overhead items on the check list that are not touched by the contract documents. For instance, under general conditions, there may be a need for highway permits and travel expense, neither of which is mentioned. The checker, having a pretty clear idea of the job as a whole, can determine practically all the items that will be required in addition to those already checked off, and can indicate them accordingly on his check list.

Organization chart

The contract documents touch very little on administrative and supervisory personnel to be charged to the job overhead, though in many cases they will cover such employees as watchmen, inspectors, and guards. Administrative and supervisory employees should be checked off.

On a small job, only a few of these men are needed, and they are easily identified. On a large job—particularly on foreign work—these men can be identified only by making up an organization chart or charts.

The checker may find that the estimator has prepared a rough organization chart as a basis for his figures, or he may have taken a percentage of the cost of the work. If the estimator has used a percentage of the work cost, the checker can refer to records to find out if the figure is correct, or he can prepare a chart or charts in detail, along with an employment schedule, and calculate the costs directly.

As each job has its own special features, the only really safe check is to prepare the organization charts, calculate the number of men required, and the final costs.

At this point, the checker can turn his attention to items under plant and equipment. This check can sometimes be made with a check list for tools and equipment. However, if there is a great deal of heavy materials equipment involved in the job, it may be well to delay this check until a project

layout is prepared. To list properly all plant and equipment items, or to make a layout, a complete and detailed knowledge of all phases of the field operations is required, and this is subject to a second reading of the specifications.

Specifications

In reading over the specifications, the checker must mark off all items that are called for. The plans are consulted during this operation so that a complete review can be made of each job element. For instance, if it is obvious that sheet piling will be required, even though this is not indicated by the plans and specifications, the item should be checked off so that it will not be overlooked. Some items will be called for under the general conditions of the specifications, which must also be reviewed.

Here also, the list will contain items that will be required, but which have not been referred to in the contract documents or plans. Items such as temporary roads, bridges, and rerouting of utilities may be required by job conditions, but may not be mentioned in the contract documents or plans. Or, the check list may not contain all the items needed. These specialties will have to be added to the total. At this stage, the check will go much faster if quantities are not being figured.

A list of the items omitted, if any, should be compiled on a blank estimate sheet, and room left under each item for a quantity takeoff. These estimate additions will have to be priced and added to the summary.

Double checking

When the check list has been marked up for all overhead and field construction items, including all parts of the permanent structure, it is checked against the estimate and the omissions noted. If the estimate has been prepared in the proper cost code sequence, the various required items will appear under their respective headings. This simplifies the checking job. If the cost code has not been used, each item will have to be ferreted out individually, and this can be a long and tedious process.

Up to this point, the checker has been concerned with making sure that all the required elements have been included. Once the checker knows exactly what is required, he can make a check on the quantity of each item needed for the job.

If the estimator has used the quantity analysis method to set down the dimensional details, subtotaling and totaling the amount of each item as summarized, checking is easier. Any major omission in the takeoff can be spotted quickly if the proper description is carried opposite each dimensional entry. Any discrepancy should be noted on a blank estimate sheet so that a correction can be made.

Dimensional data, subtotals, totals, unit prices, and extensions to the labor and material columns should be posted so that a clerk can use a machine calculator to check the computations. The machine tapes can be attached to the estimate so that the checker will not have to go over all the computations and extensions.

Unit labor prices

It is necessary, in checking unit labor prices, to use the same type of measurement for each unit. The checker, for instance, should not do his figuring in feet if the estimator has used yards.

If the checker discovers that unit labor costs are out of line, he can notify the proper authorities in writing and, at the same time, try to find out how to make the unit pay. A process chart or a series of them can help in finding alternate methods of doing the work at or below the estimated figure.

Material prices, generally, are less troublesome than unit labor costs. When unit material costs are too low, cheaper or different materials can sometimes be substituted in the work, or a stock item used instead of a special one. New sources of supply might also be found at cheaper prices, or bulk purchases may be used to secure discounts.

After the estimate is complete and ready to be summarized, it is often necessary to adjust the prices to cover items of expense not considered before and to provide for known and anticipated contingencies.

At the start of a job, the unit costs are higher than they will be a little later on. This is natural since the work will not at first be highly organized or running smoothly. Allowances should be made for this situation but, if it continues, a study of the job should be made to locate and correct the trouble.

(Next month's article will deal with "Planning and production: Work simplification".)

I-H promotes J. Vance

John W. Vance has been appointed director of public relations for International Harvester Co., Chicago, Ill. Vance, who succeeds the late Dale Cox, was formerly assistant director of public relations.

Rocky Road Ahead?

You can do more for less on Tru-Seal Tubeless Rims

You couldn't pick a tougher test than working into and hauling jagged, newly blasted rock. On jobs like this, you'll get lower cost-per-ton when your tires are mounted on Tru-Seal Tubeless Rims by Goodyear.

Tru-Seal is the only practical way to seal a multiple-piece rim. In fact, it has been adopted by the Tire and Rim Industry for tubeless replacement of all conventional tire sizes 12:00 and larger.

Like all Goodyear Rims, Tru-Seal offers these additional advantages:

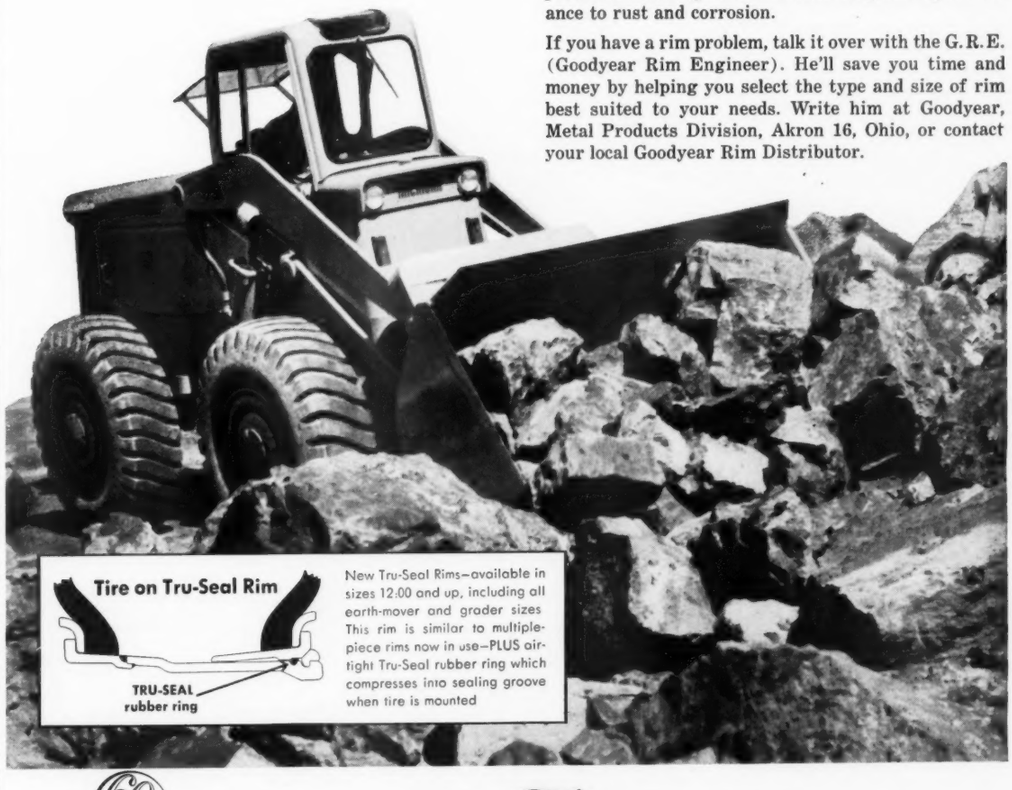
Unusual Strength: Thanks to an exclusive double-welding process, and added support at points of greatest stress, present-day Goodyear Rims are far stronger than previous rims.

Ease of Tire Mounting: No tube and flap troubles.

Special Tools: Goodyear provides both hydraulic and hand tools especially made for off-the-road equipment.

Bond-a-Coat Finish: Only Goodyear Rims have this protective coating which affords long-lasting resistance to rust and corrosion.

If you have a rim problem, talk it over with the G.R.E. (Goodyear Rim Engineer). He'll save you time and money by helping you select the type and size of rim best suited to your needs. Write him at Goodyear, Metal Products Division, Akron 16, Ohio, or contact your local Goodyear Rim Distributor.


Tire on Tru-Seal Rim
TRU-SEAL rubber ring
New Tru-Seal Rims—available in sizes 12:00 and up, including all earth-mover and grader sizes. This rim is similar to multiple-piece rims now in use—PLUS air-tight Tru-Seal rubber ring which compresses into sealing groove when tire is mounted

60 YEARS

Buy and Specify **GOODYEAR** *More tons are carried on Goodyear Rims than on any other kind*

METAL PRODUCTS DIVISION

Tru-Seal—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Watch "Goodyear Theater" on TV—every other Monday, 9:30 P.M., E.D.T.

For more facts, use Request Card at page 18 and circle No. 206

Distributor doings

Firmly established dealer is still expanding

The Atlanta, Ga., headquarters of Yancey Bros. Co. contain maintenance shops, parts warehouses, offices, and a showroom on a 12-acre tract. This office and two others in Macon and Augusta serve 82 northern counties in Georgia.

One of the nation's oldest Caterpillar dealers, Yancey Bros. Co., Atlanta, Ga., has its newest branch in Macon, Ga. The company, founded over 40 years ago by Goodloe H. Yancey, was the first dealer appointed by the Holt Tractor Co., a predecessor of Caterpillar.

The new 20,000-square-foot branch, built along the most modern lines and featuring an outdoor equipment display terrace, is located on a six-acre tract of land in the southern section of Macon at 4660 Broadway St. Its operation basically duplicates that of the Atlanta headquarters but on a smaller scale, so that service facilities throughout this area can be substantially increased.

At least half of the square-footage houses equipment maintenance facilities such as crawler-track presses and automatic welders used to rebuild tracks and rollers.

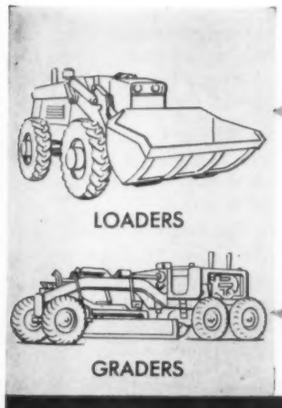
The Macon branch, staffed with about 30 people and headed by manager William M. Minor—a veteran in the equipment business with 33 years' experience—is also equipped with the latest IBM key punch and tabulator equipment, which has become an integral part of this dealer's setup.

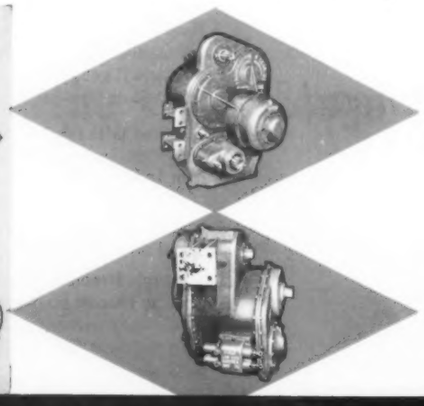
Atlanta headquarters

Sprawling over a 12-acre tract on Atlanta's Northside Drive, the firm's headquarters include over 25,000 square feet of warehouse space where most of the 25,000 spare parts are maintained. This total includes only parts stocked at the Atlanta facility; those at the Macon branch increase the total inventory of the company. Another 35,000 square feet houses Yancey's up-to-the-minute repair and rebuilding shop where any type of repair service can be performed—involving anything from the smallest part to a complete overhaul.

Tracks can be reweled and entirely rebuilt to original depth, strength, and efficiency; engines and generator sets, completely overhauled; and crankshafts, reground or replaced. A special shop section specializes in radiator overhaul and repair, and track rollers can be replaced or built up by automatic welders. All repaired or rebuilt machines are field-tested at the Atlanta site on a 5-acre proving ground. This assures the maintenance department of proper results every time.

Every piece of used Caterpillar





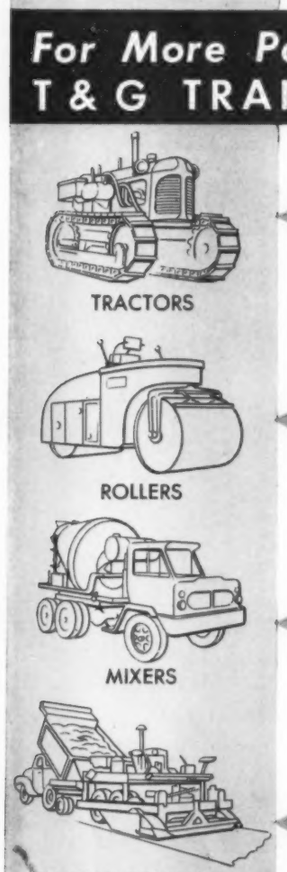
MODEL RT-585

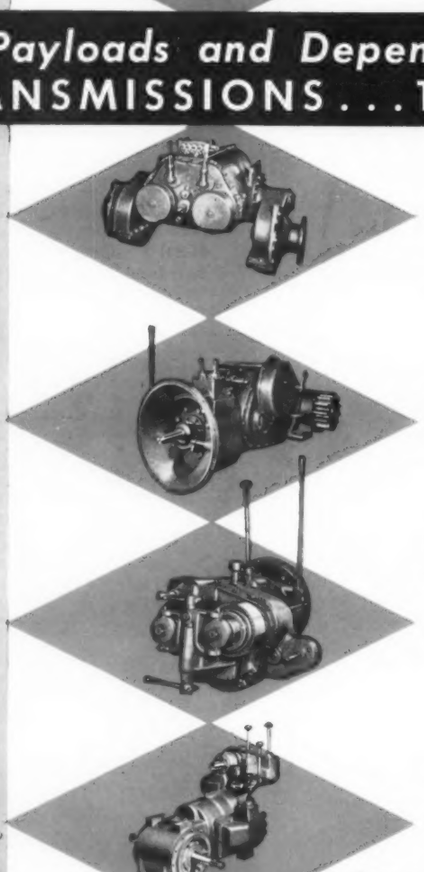
POWER SHIFT TRANSMISSION — just one of several models we manufacture for loaders covering a horsepower range of 65 H.P., 100 H.P., 150 H.P. Four-speed forward and reverse, all clutch shifting type.

MODEL RT-594-B

POWER SHIFT TRANSMISSION with 6 speeds forward—6 speeds reverse. Shifting of speeds and reversing accomplished with oversize hydraulic clutches running in oil.

For More Payloads and Dependable Service
T & G TRANSMISSIONS . . . T & G AXLES





MODEL AT-593-A

POWER SHIFT TRANSMISSION & AXLE with *counter-rotation*, 4 speeds forward and reverse, hydraulic clutches designed to withstand severest service.

MODEL RT-505

ROLLER TRANSMISSION with 3 speeds forward and reverse. Transomatic design features unitary construction for low upkeep, long life.

MODEL MH 45-D-50

TRUCK MIXER TRANSMISSION — six other models available including a *front end power take off drive* with hydraulic disengaging clutch. Our Model RT-633 suitable for front end PTO drives, cross drives, or side-mounted engines.

MODEL RT-614

HEAVY DUTY TRANSMISSION — 18-speed, forward and reverse. Six other models available for concrete finishers, spreaders, blacktop pavers, etc.

Submit your power transmitting requirements — no obligation for engineering services.

THE TRANSMISSION & GEAR CO.
10421 HAGGERTY AVENUE • DEARBORN, MICHIGAN

OTHER TRANSMISSIONS FOR FORK LIFTS, SHOVELS, CRANES, SWEEPERS, STATIONARY MIXERS • HEAVY DUTY REAR AXLES, PLANETARY TYPE AXLES — RIGID AND STEERING TYPES • LOCOMOTIVE TRANSMISSIONS AND HOISTING EQUIPMENT AND SPEED REDUCERS

For more facts, use Request Card at page 18 and circle No. 207

The founder of Yancey Bros. Co., Goodloe H. Yancey, is flanked by vice president Don Yancey, left, and O. M. Huie, secretary and treasurer of the firm.

Before a used piece of Caterpillar equipment is sent to the shop for repairs, it is first washed, dried, and painted. Here a D8 is given a finishing coat.

equipment sent to the shop for repairs is first routed to the paint shop, where it is thoroughly washed, dried, and sprayed with the familiar yellow paint of Caterpillar. It is then permitted to enter the main shop area where the required work is performed. After field-testing, the machine is sent back to the paint shop for final cleaning and another painting. This procedure not only allows the mechanics to work on clean equipment but also presents an excellent example of an immaculate repair shop.

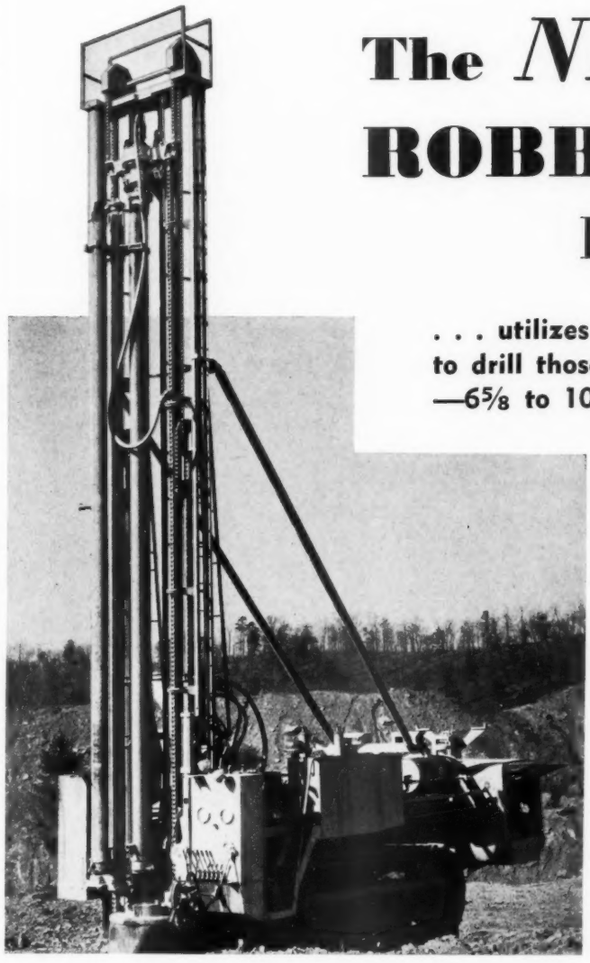
Another boast of Yancey Bros. is the 20 field service trucks that are equipped with tools and parts most frequently required for on-the-spot field repairs. The drivers of the trucks are all Caterpillar factory-trained mechanics. Complete exchange parts assemblies are also stocked as an added convenience for contractors. This allows the driver-mechanic to draw, for example, a complete clutch unit for a Cat D7 from stock, take it out to the field, remove the faulty clutch, and replace it with the rebuilt one. This, of course, reduces equipment downtime to the bare minimum and permits the mechanics to bring the faulty clutch to the shop, where it is rebuilt and returned to inventory.

Founder and foresight

Goodloe Yancey started selling machinery over the state of Georgia in 1913. Right after World War I he convinced the Holt Tractor Co. that the best way to sell tractors was through a dealer, and thus became the first Holt dealer in the United States. This feat was accomplished by offering to sell 35 machines that the Holt company had not been able to move. Armed only with Holt Tractor brochures, Yancey sold every one of the 35 tractors.

Goodloe Yancey is still active in the construction-machinery business and is still the chief executive of the company. The present Atlanta site has been in existence since 1951, when the downtown Atlanta offices, which could no longer serve the purposes of this fast-growing industry, were abandoned. The Augusta showroom and plant were built and opened in 1947. In 1957, ten years later, the Macon branch was established. The present branches will ade-

(*Continued on next page*)



The *NEW* ROBBINS RR10 Rotary Drill

. . . utilizes your crawler tractor's power to drill those big blast holes —6⅝ to 10⅝ inches in diameter!

Contractors are able to increase their profits with the new Robbins RR10 Rotary Drill by drilling larger holes on wider spacings at faster penetration rates and using low-cost explosives.

Mounted on your Cat D8 or International TD-24 crawler tractor, this brawny moneymaker employs a mechanical drive for rotating the drill bit, gets its heavy-duty GO through the tractor's front and rear power take-off. A used tractor makes an ideal unit for mounting the RR10, and **mounting can be performed quickly in the field.**

CHECK and COMPARE

- ✓ **up to 60,000 lbs. down pressure on the bit.**
- ✓ **three hydraulic jacks level the drill even on a 15 per cent grade.**
- ✓ **drill mast hinged to the pedestal; two hydraulic cylinders permit quick raising, lowering for short-haul portability.**
- ✓ **for long-distance transport, entire drill mast and compressor can be easily removed and loaded on a carrier.**
- ✓ **a 600-cfm rotary compressor mounted on the front of the tractor provides air for the removal of cuttings.**
- ✓ **rugged, heavy-duty rotary drives provide variable speeds for drilling all types of soft material and hard rock.**
- ✓ **high-capacity Rotoclone for efficient dust control.**
- ✓ **truly superior performance—penetration rates in soft material up to 12 fpm; 1½ to 2 fpm in hard blue sandstone.**

The Robbins RR10 Rotary Drill, plus your used tractor, adds up to a really rugged piece of equipment that'll take itself into areas practically inaccessible to other machines. Rough terrain poses no problem for this machine and it's made to order for those tight-quarter operations too. The Robbins RR10 Rotary Drill will cut your blast hole costs *any* way you turn!

For complete information write to —

ROBBINS MACHINE & MANUFACTURING CO., INC.
P.O. Box 281 Oneonta, Alabama

For more facts, use Request Card at page 18 and circle No. 208

distributor doings

quately serve Yancey's territory—82 northern counties in Georgia.

Personnel

Don Yancey is the vice president, O. M. Huie, the secretary-treasurer, and S. T. Yancey, the sales manager of Yancey Bros. Co. Al Hensler is the general parts manager and Harry Hollomon, the general service manager; both are located at the Atlanta headquarters. THE END

B-L-H appoints seven equipment distributors

The Construction Equipment Division of Baldwin-Lima-Hamilton Corp., Lima, Ohio, has appointed seven new distributors. Three Indiana dealers handling the Lima Roadpacker, self-propelled vibratory compactor, are Fred Malotte Machinery Co., Inc., Highway 61, Petersburg, serving 26 counties; Korte Bros., Inc., 335 Murray at LaFayette Sts., Fort Wayne, serving ten counties; and Malotte Machinery Co., Inc., 6937 E. 42nd St., Indianapolis, covering 34 counties. Contractors Machinery Co., Inc., 13200 North End Ave., Detroit, Mich., distributes the Roadpacker in 19 counties in the southeastern section of Michigan.

Distributors for Lima shovels, cranes, draglines, and pull-shovels are Ogden Equipment Co., 2361 Edwards Ave., Jacksonville, Fla., covering eight counties in the northeastern section of that state; and Machinery & Supplies Co., Inc., 2000 Walnut St., Kansas City, Mo., serving all of Kansas and western Missouri. The Jaeger-Lembo Machine Corp., Corona, L. I., N. Y., distributes Lima and Lima Austin-Western equipment in 13 counties of New York State, including the metropolitan area, and handles crushing equipment in 13 counties in New Jersey.

Engler Instrument news

The national distribution outlets of the Engler Instrument Co., Jersey City, N. J., manufacturers of registering and recording devices, will be the exclusive distributors for the V D O Tachograph, manufactured by the V D O Instrument Co. of Frankfurt, Germany, and Detroit, Mich.

The Tachograph records vehicle operation in chart form, maintaining a permanent record, for uninterrupted periods up to seven days, of speed, mileage, and whether the vehicle is moving or not.

Parker-Hannifin dealers

Parker-Hannifin Corp., Cleveland, Ohio, has appointed two dealers to carry its line of Hoze-lok reusable fittings and industrial hose. Williams & Co., 3700 Perkins Ave., Cleveland, and 946 Kane St., Toledo; and Gordon Auto Parts Co., Second and Cedar Ave., Moundsville, W. Va., will cover their respective areas.

Warner & Swasey appoints four Gradall dealers

Four new Gradall distributors have been appointed by The Warner & Swasey Co., Cleveland, Ohio. The Pecaut Equipment Co., 900 East Eighth St., Sioux Falls, S. Dak., serves the entire state of South Dakota. Lake Shore, Inc., Iron Mountain, Mich., handles 15 counties in the Upper Peninsula. Ryan Equipment Co., 3350 Morganford Rd., St. Louis, Mo., covers 11 western Illinois counties and 11 counties in the eastern portion of Missouri. The Capital Equipment Co., Inc., 2050 West Moreland St., Richmond, Va., serves the entire state of Virginia, with the exception of Loudoun, Fairfax, and Arlington counties.

Metalweld appoints Manion

James J. Manion has been named a sales engineer for Metalweld, Inc., Philadelphia, Pa. He will service contractor accounts in the Philadelphia area and will keep contractors fully informed on heavy-construction machinery manufactured by International Harvester, Hough, Worthington, Lima, Schield Bantam, Pitman, and Erie Strayer.

Giles & Ransome opens new rebuilding division

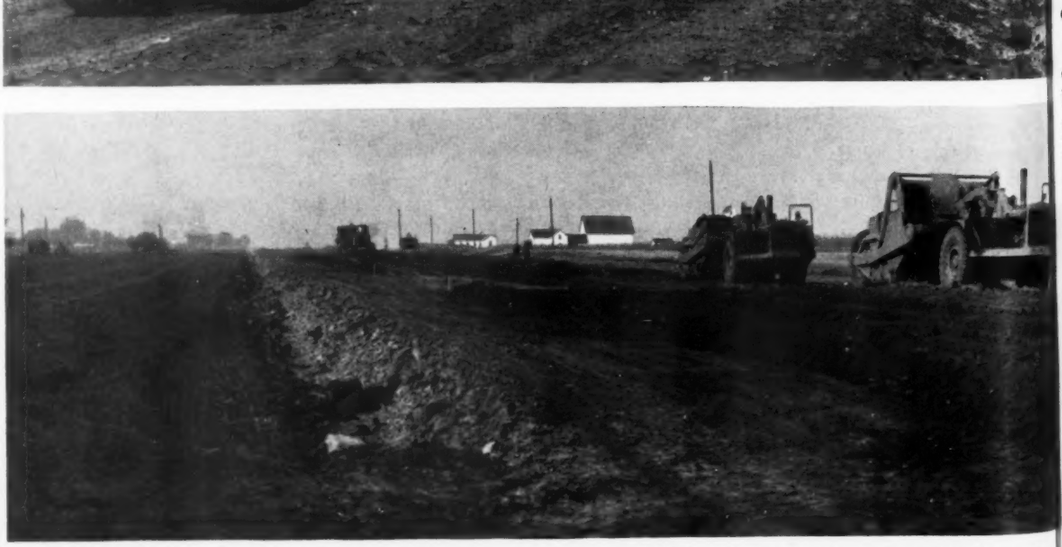
Giles & Ransome, Inc., Philadelphia, Pa., has recently completed a rebuilding division to offer contractors in the Delaware Valley area an undercarriage rebuilding service.

The new equipment installed for this service includes: a dual-head, track-link, automatic welding machine; two multi-spindled roller and idler rebuilding machines; a high-speed disassembly and assembly press; a boring fixture; and a dual-ram track press which completely eliminates broaching. Other equip-

CATERPILLAR

BUILDING THE WORLD'S MOST PRECISELY ENGINEERED HIGHWAYS

A fleet of CAT-built machines worked to exacting standards constructing loops for the AASHO Road Test. Grading operations alone required 114 engineers and technicians, 50,000 tests.



Caterpillar DW21s and DW20s with Scrapers helped move 1¼ million cu. yd. of earth in 3 months. At peak, more than 25,000 cu. yd. were moved daily. About half of this was placed in the upper three feet of embankment under strict controls for uniformity.

ment is a track rotating fixture for grouser bar replacement; a specially designed jig for sprocket-rim replacement; and a conveyor and crane system for material handling.

Several pieces of equipment for this operation have been completely designed by Giles & Ransome.

Buffalo-Springfield news

The Buffalo-Springfield Roller Co., Springfield, Ohio, Division of Koehring Co., has appointed G. C. Phillips Tractor Co., Inc., Birmingham, Ala., a dealer in that state and 10 counties in northwest Florida, for the firm's complete line of rollers and compaction equipment.

Yale & Towne names three

The Yale & Towne Mfg. Co., Batavia, N. Y., has appointed three new distributors for its Trojan line of tractor shovels. Prairie State Equipment Co., 107 E. Juliette St., Thornton, Ill., serves the upper half of that state; Wepco Equipment Co., 3421 Independence Road, Cleveland, Ohio, serves northeastern Ohio; and the Frost Machinery Co., Ltd., 971 Erin St., Winnipeg, Manitoba, Canada, covers the province of Manitoba. THE END

Flintkote subsidiary opens Nevada plant

U. S. Lime Products Corp., Los Angeles, Calif., subsidiary of Flintkote Co., New York City, has opened a $2 million manufacturing plant in Arrolime, Nev., about 19 miles northeast of Las Vegas. The lime calcining plant has a production capacity of more than 400 tons of lime products per day.

The new plant is located on the main line of the Union Pacific Railroad and adjacent to transcontinental highway U. S. 91. Lime products produced at the plant will supply the major metallurgical, paper, chemical, and construction users throughout the Western states.

Papers on soil mechanics, foundation engineering

"Proceedings of the Fourth International Conference on Soil Mechanics and Foundation Engineering", Volume III, contains complete data on the conference which was held August 12 to 24, 1957, in London.

Every paper—including diagrams, tables, graphs, and pictures—has been published in the French-English book. Delegates from 51 countries presented their papers at nine sessions.

The three-volume set may be purchased for $79.50 from Interscience Publishers, Inc., 250 Fifth Ave., New York 1, N. Y.

Union Metal opens Northwest sales office

G. W. Kolling has been appointed manager of the new Northwest district sales office of Union Metal Mfg. Co., Canton, Ohio. The new office is located at 3025 S. W. 58th St., Portland, Ore. Kolling will be responsible for the sale of Union Metal lighting poles, foundation piles, and material-handling equipment in a six-state area.

At the same time, E. B. Moss has been transferred to the Southeast district, with headquarters in Atlanta, Ga. Moss was previously a sales engineer in the home office.

American Photocopy moves to new headquarters

A 10.3-acre site at 2100 W. Dempster St., Evanston, Ill., is the new home of American Photocopy Equipment Co., formerly of Chicago. For the first time, administration, engineering and research, production, shipping, and warehousing for APECO's Photocopy and Plastics Divisions and its Clayton Chemical Co. Division operations are consolidated under one roof.

The one-story brick structure was acquired last year and remodeled for APECO.

Marion Power names four sales representatives

Jack W. Forgy, E. R. Johnsen, Joseph E. Fodor, and Peter F. Jarvis have been appointed sales representatives for the Marion Power Shovel Co., Marion, Ohio. From Kansas City, Mo., headquarters, Forgy covers Colorado, Wyoming, Nebraska, Kansas and the western sections of Missouri and Iowa.

Johnsen, assigned to the Phoenix, Ariz., office, serves that state, Utah, and parts of Idaho, Nevada, Wyoming, and New Mexico. From the New York City branch, Fodor is covering western Pennsylvania and western New York. Jarvis, working from Ontario, Canada, headquarters, is the district manager for eastern Canada, covering the Maritime Provinces and the provinces of Ontario and Quebec.

Caterpillar D8 Tractors pulled pneumatic rollers for precisely measured compaction. Gross weight of the unit is 15 tons; weight per square inch of tire—425 pounds. Seven to eight passes were required to provide the density demanded.

In La Salle County, Ill., six highway test loops make up what is probably the most rigidly engineered and supervised highway construction job in history.

It had to be. For these roads are the site of the largest, most comprehensive highway research project ever undertaken. Known as the AASHO Road Test, its prime objective is "to study the behavior of pavements of known thickness under dynamic loads of known magnitude and frequency."

Results of the $22 million test will be reported to Congress and probably will affect highway design and construction for years to come.

As is standard on any exacting, important highway construction job, Cat DW21 and DW20 wheel Tractors, D8 track-type Tractors and No. 12 Motor Graders were put to work by S. J. Groves and Sons Co. and Arcole-Midwest Corp. These machines, with their high availability record and minimum maintenance requirements, helped move 1¼ million cu. yd. of earth in 3 months under controls more strict than ever before attempted in large-scale highway construction. Grading operations were completed for four main loops of 6,600 feet each of four-lane divided roadway, a 4,400-foot loop, and a 2,200-foot loop. Total distance around each of the main loops is 3.1 miles.

For test traffic, trucks with axle loads ranging from 2,000 pounds on a single axle to 48,000 pounds on a tandem axle are scheduled to run 18 hours a day, six days a week, for two years over the five largest loops.

As the big yellow machines rolled on the job, thousands of tests were conducted continuously to assure precise uniformity of the earth in embankments. Compacted density was controlled between 95 and 100 per cent of standard maximum, and moisture content was controlled between plus or minus 2 per cent of optimum. During grading operations, 50,000 tests were performed and 114 engineers and technicians were at work both in construction control and in the materials laboratory.

As is usual in jobs where there is no margin for error, Caterpillar-built machines were at work.

No. 12 Motor Graders, workhorses of highway construction, maintained haul roads and graded to fine tolerances. Grading was carried out in blocks 500 to 800 feet long.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

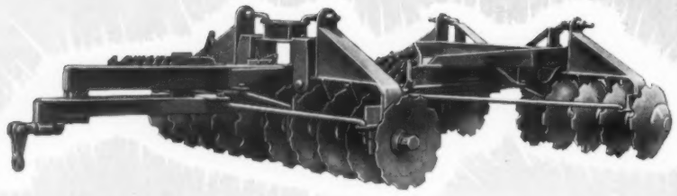
For more facts, use Request Card at page 18 and circle No. 209

Smooth paving operation completes extension link

A Mack truck dumps a concrete batch to the skip of the Rex paver working on the urban extension of the Louisquisset Pike near Providence, R. I. The 5½-inch first lift of concrete is being struck off by a Blaw-Knox spreader.

AMCO INDUSTRIAL LINE
Big tools for big jobs

The MASTER LINE



*FEATURES OF THESE MACHINES ARE IDENTICAL

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The biggest of the biggest. 14,000 pounds of built-in weight. Deep penetration in toughest of conditions. Tri-ply sealed ball bearings by Fafnir.

BRUSHMASTER
Built to go where you want to put your heavy-duty tractor. 5,000 to 5,400 pounds with 2¾" axles and reinforcing discs to back up 26" or 28" blades. Fafnir tri-ply sealed ball bearings.

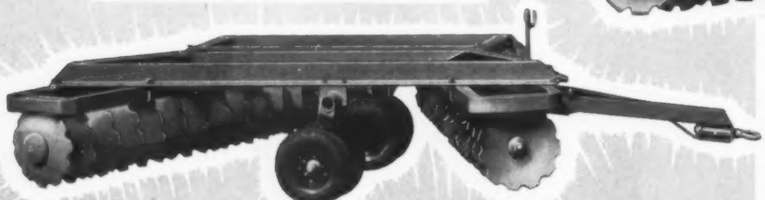
CROPMASTER
Especially designed for right-of-way work and soil preparation. Extremely job-worthy where the soil is heavy and sticky. Weights from 2,750 to 3,200 pounds with 24" or 26" discs.

BRUSHMASTER OFFSET HARROWS

Two more fine machines in the AMCO family. This AMCO two-way plow weighs from 6,650 pounds to 7,700 pounds. First line Goodyear tires and Fafnir tri-ply sealed ball bearings are just outward indications of quality. Fine steel, workmanship and exhaustive field tests are behind all AMCO products.

This drag-type AMCO Brushmaster two-way plow is excellent for land clearing, rights-of-way, road sides, and under power lines. In road construction this and other AMCO machines may be used for aeration, mixing water and soil for compaction and mixing aggregate on the roadbed. Weights from 6,500 to 7,000 pounds.

MASSIVE BUSH & BOG
In all Master Line tools the rear unit is detachable, leaving the front unit as a heavy-duty bush and bog. You actually obtain two machines in one:
Jobmaster units—from 6,000 to 7,000 pounds.
Brushmaster units—from 2,550 to 2,690 pounds.
Cropmaster units—from 1,400 to 1,640 pounds.



OPEN FIELD OFFSET HARROW
with Rigid Frame
Built around a sturdy double pivoted main frame that assures excellent penetration and constant implement alignment for dozens of jobs. 9-foot and 10½-foot and 12-foot cutting widths. Weights from 2,775 to 4,500 pounds. Fafnir tri-ply sealed ball bearings or cast iron bearings.

ALEXANDER MANUFACTURING COMPANY
P. O. BOX 407 SYcamore 8-4791 PICAYUNE, MISS.

For more facts, use Request Card at page 18 and circle No. 210

Paving of more than 2½ miles of two 24-foot roadways in four months is not fast production, but it becomes so if seven weeks of that time is counted as a delay. A strike held up delivery of materials and accounted for almost two months of lost time on this job.

The project was the paving of the Louisquisset Pike's new urban extension just north of Providence, R. I. The contractor handling the $1,019,120 paving contract was Campanella & Cardi Construction Co., Providence, the same outfit that did the grading of this and adjacent stretches of the pike under separate contracts.

Paving spread

Campanella & Cardi had about 7,800 linear feet of 8-inch steel forms on the job. Form setting was swift, since the contractor did not have to excavate and compact the form trench. Grade pins, driven into the base, were offset 2 feet from the edges of the 12-foot width of the slab. The grades of the finished design base course were then marked on the pins along the roadway. The grade was obtained by fine-grading the roadway between the grade pins with a motor grader.

The forms were then positioned atop the finished grade and held in place by form stakes driven by an air hammer. A 10-ton tandem roller was used to compact the grade between the forms, and a scratch board was used to check the completed grade.

Campanella & Cardi kept forms placed at least 2,300 feet ahead of the paver so that a full day's work was always ready for the paving train.

The paver was kept charged by a fleet of 9 batch trucks, each with a 4-batch capacity, and two 1,000-gallon water tankers kept the paver fully supplied with water.

As the concrete mix was dumped between the forms, the spreader trimmed it to a 5½-inch thickness so that welded-wire-mesh reinforcing could be placed. After additional concrete was dumped over the reinforcing, the spreader made a second pass to bring the slab to its 8-inch thickness.

Construction joints, having asphalt-impregnated cork filler supported by the wire saddles, were

After USS welded-wire-mesh reinforcing is positioned on the 5½-inch lift, additional concrete is dumped between the forms to be struck off at the full 8-inch depth of the slab by the B-K spreader.

A Jaeger double-screed transverse finishing machine follows the spreader. Just behind, a crew gives finishing touches to the slab with aluminum straightedges.

Equipment on this job

- Blaw-Knox and Jaeger 8-inch steel forms
- A Caterpillar No. 12 motor grader
- An Ingersoll-Rand air hammer powered by a Sullivan 60-cfm truck-mounted air compressor
- A Buffalo-Springfield 10-ton tandem roller
- A Rex 34-E paver
- Nine Mack batch trucks, each with a 4-batch capacity
- Two 1,000-gallon water tankers
- A Blaw-Knox spreader
- USS welded-wire-mesh reinforcing
- A Jaeger double-screed transverse finisher
- Aluminum straightedges
- Sisalkraft paper
- A Jersey spreader mounted on a D7 tractor
- An Adnun paver-finisher
- A Blaw-Knox batch plant with 3-compartment 60-ton aggregate bin
- A P&H crane with 65-foot boom and Owen bucket
- Darex air-entraining agent

spaced on 73½-foot centers. Removable metal caps, placed over the cork joint fillers, made continuous paving possible. These were removed before the concrete set.

Following the spreader was a double-screed transverse finishing machine, which was trailed by a crew handling aluminum straightedges. To obtain a rough texture on the slab surface, and to remove laitance, the contractor had a 1½-inch rubber hose pulled over the concrete surface. After this the concrete was broomed.

After removing the metal filler caps from the joints, the contractor covered the fresh concrete with Sisalkraft paper for curing. This permitted forms to be stripped after 24 hours, even though the Sisalkraft paper was kept in place for at least 72 hours. The forms were stripped by a contractor-built device and loaded on a flat-bed truck to be moved ahead of the paver.

The new roadway consists of two 24-foot pavements separated by a 15-foot grassed median and 3-foot inside Class 1 shoulders. Outside shoulders, 12 feet wide, were constructed by covering a 5½-inch compacted stone base

(*Continued on next page*)

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Why not use a simplified way of guarding your equipment against improper lubrication that causes unnecessary breakdowns?

All you need is Mobil's easy-to-follow Contractor PM System—a practical program that's specially designed to help reduce your paper work, help keep your equipment in top working order—and these important Mobil lubrication aids:

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Lubrication Engineering Service that includes analysis, advice and use of Mobil's outstanding technical know-how and show-how.

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CONTRACTOR PM SYSTEM INCLUDES:

1. Record Folder—provides identifying data for each piece of equipment, holds equipment records.
2. Operator's Recommendation Chart—lists the correct lubrication recommendations for each piece of equipment.
3. Weekly Service & Inspection Report—an up-to-date record of mechanical condition of equipment, work to be done or completed.
4. Delivery Ticket—lists petroleum supplies delivered to equipment on the job.
5. "Squawk" Sheet—used by equipment operator to point out trouble spots that need attention.

Available—film on equipment safety, maintenance. Call nearest Socony Mobil office.

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SOCONY MOBIL OIL COMPANY, INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

For more facts, use Request Card at page 18 and circle No. 211

At the batching setup, a P&H crane with 65-foot boom uses an Owen rehandling bucket to charge aggregates to the Blaw-Knox 3-compartment 60-ton aggregate bin. The Mack truck is being loaded at the drive-through bin.

After picking up aggregates, the batch truck receives cement at this Blaw-Knox bin. The bin is located at a railroad siding, and cement is delivered by bottom-dump rail cars and charged to the bin by screw conveyor and enclosed elevator.

(Continued from preceding page)

with 3 inches of asphaltic concrete. A tractor-mounted spreader laid the crushed base stone for the shoulders, and a paver-finisher placed the 1½-inch binder course and the 1½-inch wearing surface, both of which were rolled as they were put down.

Batch plant

The contractor set up the batching plant alongside a railroad siding at the south end of the project. The Blaw-Knox 3-compartment 60-ton aggregate bin was charged by a P&H crane equipped with an Owen rehandling bucket on a 65-foot boom.

Three stockpiles were maintained around the aggregate bin—sand, ¼ to 1¼-inch, and 1¼ to 2½-inch stone. Trucks delivered the aggregate to the plant-site stockpiles, which were shaped and maintained by a tractor-dozer.

Batch trucks, arriving first at the aggregate bin, were charged per batch with 1,635 pounds of sand, 1,195 pounds of the ¼ to 1¼-inch stone, and 1,200 pounds of the 1¼ to 2½-inch stone. The various ingredients were weighed by a beam scale and manually released.

Cement was delivered to the job by bottom-dump rail cars which used the railroad siding adjacent to the cement bin. The drive-through type bin was charged with cement through an under-track hopper, a screw conveyor, and a 40-foot enclosed elevator. The batch trucks, after leaving the aggregate bin, received 752 pounds of cement per batch at this point. About 6 to 7 ounces of air-entraining agent was added at the paver to maintain 4½ to 7 per cent air in the concrete mix. The mix also required 5½ gallons of water, which was supplied by the paver.

Personnel

Robert Wetzel was the superintendent on the job for Campanella & Cardi Construction Co. James Richardson was the resident engineer for the Rhode Island Department of Public Works, of which Joseph Vallone is director. THE END

The Convention Calendar appears on page 86 of this issue.

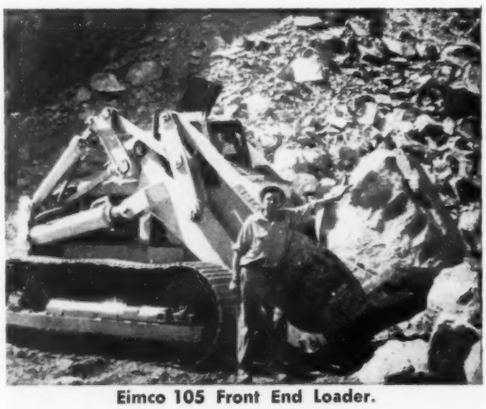
6 YARDS PER MINUTE WITH A 105 EXCAVATOR

Constructing a dam spillway involves a considerable amount of earth moving. It also presents loading problems because of extremely tight working quarters.

At a dam project, they had been moving earth, consisting mainly of decomposed shale, with ¾ yd. shovels loading from stockpiles pushed up by a bulldozer. In addition, the bulldozer had to rip the earth before dozing. This meant three separate operations — extra equipment tied up — an extremely costly, time-consuming job.

A versatile EIMCO 105 Excavator moved in — flying earth was all that could be seen from then on. The 105 overhead loader walked into the narrow spillway channel, started loading out 6-yard dumptors at the rate of one every 40 seconds — total time lapse for dumptor to move in, be loaded, move out: ONE MINUTE. The bulldozing and ripping operations were completely eliminated — production costs, equipment required, and time consumed were reduced to an absolute minimum.

EIMCO also manufactures a 105 Front End Loader with the same rugged construction and high production rates as the 105 Excavator. Write The EIMCO Corporation for detailed information on EIMCO high production, cost-saving 105 Loaders.



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Labor review

New Jersey legislation on unemployment benefits for strikers is protested

A spokesman for the New Jersey construction industry attacked as "unjust and dangerous" a bill passed by the state assembly to provide unemployment benefits to strikers after six weeks off the job.

Paul J. Brienza, managing director of the Building Contractors Association of New Jersey, charged that the measure is "clearly class legislation, strictly political in character, and motivated by the radical and reckless liberalism being sponsored by certain labor leaders . . .".

At least one labor leader — Peter Weber, Operating Engineers Union Local 825 business manager — came back with a charge in the northern New Jersey press that Brienza "appears hell-bent on returning labor relations in construction trades to the law of the jungle—the rule of fang and claw".

Pointing out that 6,500 carpenters who were on strike or locked out in northern New Jersey since May 1 would have been receiving compensation under the measure if it were in effect, Brienza said that "strikes in the industry this spring, which at one time affected over 20,000 men, would have been unnecessarily prolonged and a financial burden to the state."

On the contrary, said Weber, living costs "make it imperative for a man to remain at his job at his regular salary as long as possible because you can't live on unemployment compensation".

Cement Masons' local tries to void bargaining pattern, say Pennsylvania employers

Alleged whipsaw tactics by Cement Masons' Local 526 resulted in a suspension of all work on 168 construction projects in nine western Pennsylvania counties. The shutdown by members of the Master Builders Association of Western Pennsylvania idled about 8,000 men on jobs valued by an employer spokesman at $120 million.

Scattered picketing by the union and the subsequent action by employers triggered a series of charges and counter-accusations. The employers contended that the Cement Masons were attempting to destroy the established bargaining pattern, and filed unfair labor practice charges with the National Labor Relations Board. The union, on the other hand, accused the employer group of refusing to bargain in good faith by offering the same money package agreed to with other crafts on a take-it-or-leave-it basis.

The association has settled with other unions on the basis of 37½ cents more in wages over two years; the Cement Masons want an added 10 cents in 1959.

Scale before the walkout was $3.62½.

MBA offered an immediate 15-cent increase in wages and 25 cents in fringes, 5 cents more in December, 10 cents next June, and 5 cents in December, 1959. This package, according to an employer representative, was roughly the basis of settlements with other trades bargaining with the association.

Seattle AGC, Masons' local agree on new contract after year of bargaining

A four-day strike and a year at the bargaining table resulted in a new two-year contract between Seattle's Associated General Contractors and Cement Masons' Local 528.

The settlement, according to AGC, calls for a 15-cents-an-hour wage hike, retroactive to May 1, and another 10 cents an hour on September 1. The September increase, AGC says, represents part of the 1959 settlement, with the contractors and union already agreed to an unspecified and unwritten "understanding" on 1959 wages. The two-year contract expires December 31, 1959.

The new base rate is $3.23, which includes 10 cents an hour for health-welfare. The 10 cents, AGC explains, will be diverted to health-welfare when a plan is set up.

One of the key issues was settled with contractors agreeing to pay time-and-a-half for the first hour of overtime on heavy and highway work outside the city limits, and double time for any additional overtime. AGC will pay time-and-a-half for Saturday work on a declared 6-day job for the first eight hours and double time afterwards, the employer group reports.

Operators, finishers get 12½-cent pay hike in Ohio

State-wide agreements in Ohio were concluded by the Contractors Association and the Operating Engineers and Cement Finishers. The one-year contracts, which apply on all highway projects in the state, call for hourly pay increases of 12½ cents an hour. Terms are the same as those reached with the Teamsters and Laborers.

The new contracts are retroactive to June 9. THE END

ROUGH GROUND DOESN'T STOP THIS RUBBER-TIRE EXCAVATOR!

How **LORAIN SP-107** licks off-the-highway travel:

- Oscillating, spring-mounted front axle
- Hugs the ground for maximum traction
- No hang-up . . . no wheel spin
- Powerful, 4-wheel drive

Until now, Self-Propelled, rubber-tire shovel-cranes were restricted pretty much to smooth, hard-ground travel. Now, the 3/8-yd. Lorain SP-107 is available — to move right in over the rough, soft-ground conditions that exist off-the-highway on most hoe, shovel and dragline jobs.

Lorain put a powerful, 4-wheel drive carrier under the hydraulic-controlled turntable and then added an oscillating, spring-mounted front axle. Result? Vastly improved off-the-highway travel. Front wheels hug the ground and the 4-wheel drive carries the SP-107 where self-propelled machines could not go before . . . hang-up and wheel spin are no problems.

Where *maximum* lifting capacity is needed, the front spring action can be quickly "locked out" to give solid axle, full 7-ton crane capacity over front, rear or sides, without setting out-riggers.

This "go anywhere" rubber-tire shovel-crane combines mobility, maneuverability and tractive power to get in to the job . . . get it done in a hurry . . . and get out fast . . . to hustle down street or highway to the next job.

There is more you should know about the SP-107 . . . features such as: fast, easy-acting hydraulic clutch controls; the optional 4-wheel steering; the exclusive, lighter, yet stronger, square-tubular-chord crane boom. And best of all, the surprisingly low cost for such Lorain quality.

See your Thew-Lorain Distributor . . . and check, too, the on-the-spot parts and service facilities that are such plus values when you buy Lorain!

Notice how wheels on the oscillating, spring-mounted front axle of the SP-107 hug the rough terrain . . . keep powerful, 4-wheel traction at work.

The Thew Shovel Co., Lorain, Ohio, U.S.A.

THEW LORAIN® SP-107
RELIABILITY IN ACTION

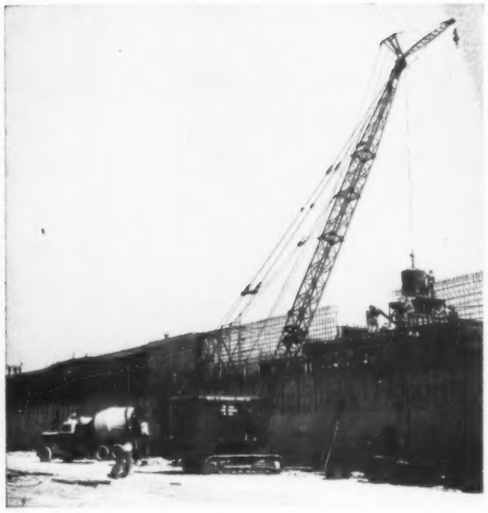
For more facts, use Request Card at page 18 and circle No. 213

The filter substructures for Chicago's Central District Filtration Plant rise from the center of a man-made peninsula at the edge of Lake Michigan. A maze of walls, conduits, pipe galleries, manifolds, and passageways is making concrete pouring a complex operation.

At world's largest filtration plant

Concrete-placing methods make complex job go smoothly

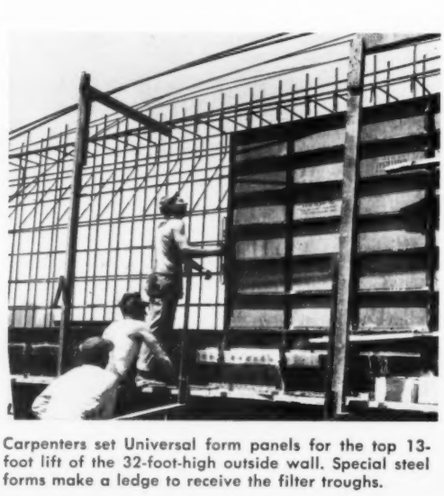
by **BILL ALLEN**
field editor



On the east side of the substructure, a P&H 655 crane swings an Insley 1¾-yard bucket from a Smith 11-yard mixer on an Autocar diesel truck to a hopper. In the shadow of the boom, men form the top lift of the 32-foot-high outside wall.

Jackson hand buggies—used because of the maze of reinforcing and restricted work space—bring concrete from the hopper to the walls of the gullet, the corridor-like structure with square openings. Water goes from here to a concrete channel deep in the structure.

Concrete is being dumped from the Jackson hand buggy through a tremie for the bottom of the channel. The two walls are completed next; the cap, last.



Carpenters set Universal form panels for the top 13-foot lift of the 32-foot-high outside wall. Special steel forms make a ledge to receive the filter troughs.

What was once a sparkling expanse of blue Lake Michigan is now 61 acres of land bristling with the booms of busy cranes and vibrating with the noise of construction.

On the man-made peninsula, engineers and construction men are building the world's largest filtration plant at an estimated cost of $95 million. Located just north of Navy Pier in Chicago, the Central District Filtration Plant will supply 960 million gallons of crystal-clear water daily to some three million people in the Windy City and adjacent suburbs.

At present, Chicagoans not served by the South District Filtration Plant drink chemically treated but unfiltered water from Lake Michigan. With the completion of the new plant in July of 1961, all residents will have filtered water.

Cofferdam

Since the start of the project in June, 1952, men and equipment have been working both above and below the ground to complete the early stages of the complex job.

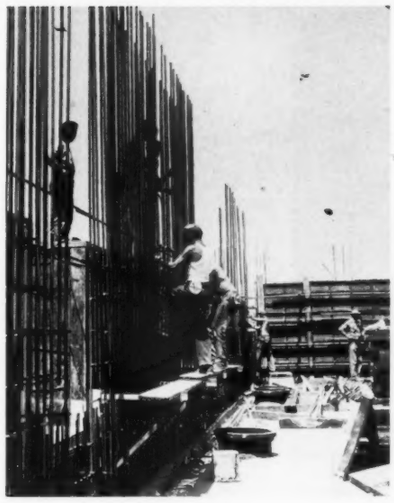
The first stage to be completed was the cofferdam enclosing the 61-acre site. Two types of construction were used in building the cofferdam walls. Along the south side, opposite Navy Pier, and along a portion of the north side, a cellular-sheet-pile cofferdam was built. A 400-foot clear slip is provided between the cofferdam walls and Navy Pier. The walls are also used to dock ships unloading supplies for the plant.

The remaining sides of the cofferdam are of dike-type construction, and they consist of a clay core faced with a 3-foot layer of cover stone up to 1 ton in weight and a layer of large

The $10 million contract for work on the filter substructures of the Central District Filtration Plant in Chicago is being handled with a carefully selected roster of concrete handling and placing equipment.

The untreated timber piles for the foundation construction were driven into the lake bottom by four cranes with Vulcan steam-driven hammers. Concrete for the base slab was pumped into place with a Rex Pumpcrete machine. Wall and floor pours are being made in Universal form panels.

Concrete, with Darex air-entraining agent added, is being delivered to the site by Smith 11-yard mixers mounted on Autocar diesels. A Bucyrus-Erie 38-B and a P&H 655 crane are being used to bucket the material to hoppers, and Jackson hand buggies are being used to bring concrete to the forms. Elevated slabs are being formed on Beaver-Advance scaffolding.



A curtain of reinforcing goes up for one of the walls of the filter pipe gallery by steelworkers. With Cal-Tie reels on their belts, they tie in the 1-inch vertical bars to the double layer of reinforcing. Some 20 million pounds of steel is going into the job.

stones with a minimum weight of 4 tons. After the walls were built, it took nearly two months to pump out the 240 million gallons of water contained by the cofferdam. The level of the ground inside the cofferdam was held at about eleven feet below mean lake level.

Tunnels

Before the cofferdam was completed, work had started on a $12½ million contract for driving about six miles of 16-foot and 20-foot tunnels to tie the plant in with existing lines. The horseshoe-shaped tunnels were driven through rock at depths of 180 to 220 feet below ground level. At present, drilling has been completed, and the contractor expects to finish the concrete lining by this fall.

Structures

Within the cofferdam, concrete and steel are rapidly pushing out of the the ground. Herlihy Mid-Continent Co., Chicago, has completed work on the 67-million-gallon reservoir at the west end of the site. The enclosed reinforced-concrete structure will receive filtered water from the plant and discharge it to two 16-foot tunnels that will carry the water to the city's pumping system.

Work on the filter substructures is progressing ahead of schedule and is expected to be completed before this winter. The contract for the four settling basins has already been awarded.

Filter substructures

The size and complexity of the filter substructures make current work on the $10 million contract in-

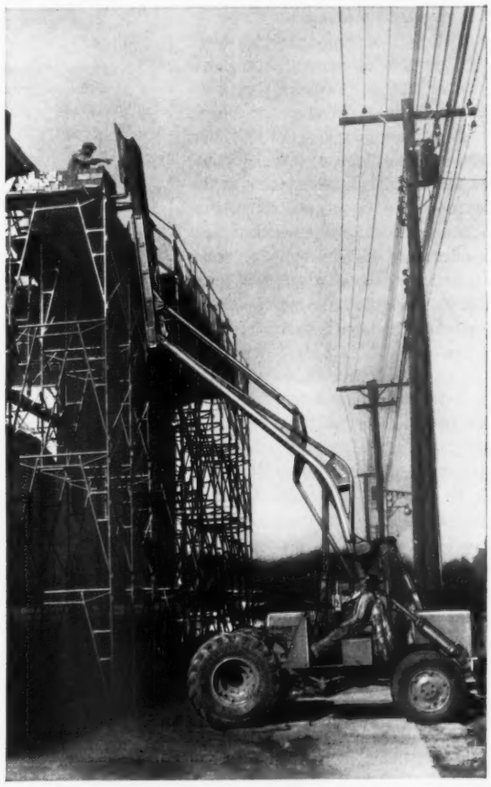
(Continued on next page)

Lifts a ton of bricks
TO THE THIRD FLOOR

LULL HI-LIFT LOADER

The Lull Model 77 is the highest fork lift on the market. It can handle materials at all levels from 2 feet to 30 feet. Only Lull Hi-Lift has variable transverse movement—a necessity in the high-lift field! It can reach forward ten feet from the wheels to pick or place a load on the far side of a scaffold, truck or railroad car. The Hi-Lift modernizes construction methods and pays for itself in man-hours saved.

Model 77 Hi-Lift Loader will lift 4,000 lbs. to 20 feet, 3,000 lbs. to 25 feet—it will place a 2,000 lb. pallet load on a scaffold 30 feet high. Money-making attachments include a concrete hopper, material bucket, brick forks, workmen's platform and crane attachment. The Hi-Lift has power hydraulic steering. It's available with four transmission speeds both forward and reverse. You can also have a torque converter with reverse-a-matic and 6 forward speeds that can all be reversed with a single control. High-flotation tires are available for loose, unstable soil conditions. Individual wheel power brakes give you the shortest turning radius of any high-lift manufactured.



Dependability, stability and operator safety are engineered into all Hi-Lift models—anti-friction roller telescopic towers, tubular truss-braced lift arms, double saddle mounted frames. The Model 77 is only one of our complete line of Hi-Lifts with capacities from 1,600 to 8,000 pounds. Nationwide service available on all models. Write today for your illustrated specification bulletins.

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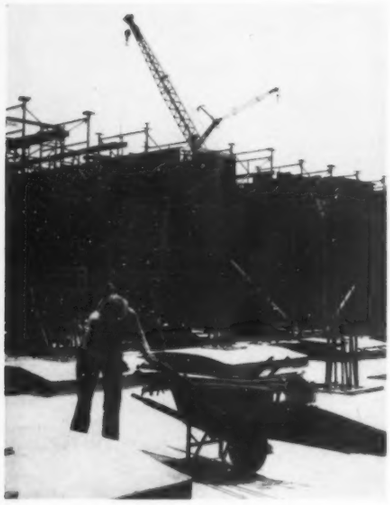
Transverse movement allows forks to reach forward 10' 10" from front wheels to tip of fork—retracts to 5' 2" from front wheels to tip of fork for compactness and stability in carrying and lifting loads.

Dependable mechanical linkage automatically keeps forks parallel to ground whether picking up, lifting or reaching for a load—operator can tilt forks in either direction for easier placing or picking up of loads.

For more facts, use Request Card at page 18 and circle No. 214



The base slab of the filter structure, with monolithically poured raised pedestals containing column dowels, stands complete. In the background, formwork for the floor and manifold of the filters is built on Beaver-Advance scaffolding.

(Continued from preceding page)

teresting. The work, which is being done by Gust K. Newberg Construction Co., Chicago, involves the setting of 20 million pounds of reinforcing steel and the pouring of 92,000 cubic yards of concrete. While the quantities are large, the biggest job is figuring where to place the concrete and how to place it. The reinforced-concrete structure is a complicated maze of walls, conduits, and pipe galleries that would give pause to the best layout engineer.

The substructure consists of two 380×695-foot filter units, each containing 48 filter beds. The 58×71-foot beds contain the sand and gravel through which the settled water passes on its way to the lower clear-well area. From the clear-well area, the water is collected in conduits that carry it to the filtered-water reservoir.

Generally speaking, the structure has two levels. The ground slab, at an elevation of minus 10, holds the clear water. The floor of the filter chambers, at plus 9, holds the sand and gravel. The entire structure is honeycombed with water conduits, pipe galleries, manifolds, and other passageways for getting the water to and from the filter.

Pile driving is big job

Before the concrete work could start, 34,000 untreated timber piles had to be driven into the clay of the lake bottom. Four cranes, handling steam-driven hammers, drove the piles to an average depth of 51 feet. Designed loading was 25 tons for each pile. With field piles on about 6-foot centers and clusters of nine piles under each column, the excavation resembled an underground forest.

Pump concrete to base slab

Pouring of the 12-inch base slab was complicated by the double layer of reinforcing steel and the closely spaced column pedestals. The bottom of the slab was flat, but at each column above the pile cluster, a raised pedestal was formed. The pedestal was poured monolithically with the floor slab.

Because of the heavy network of reinforcing steel and column dowels, the contractor decided to place the concrete with a Pumpcrete machine. It was stationed at only two points to pump concrete for the entire 695×380-foot slab. The Pumpcrete was stoked by 11-yard transit mixers.

Materials Service Corp. of Chicago is supplying the 92,000 cubic yards of concrete for the job. The 3,750-pound concrete contains 50 pounds of fly ash per cubic yard. The fly ash is added to make the concrete more workable and to increase watertightness and durability. The mixture also contains one ounce of air-entraining agent per sack of cement. Ryerson Steel Co. of Chicago is furnishing the reinforcing steel—all 20 million pounds of it.

Patented form panels speed work

In going up with the rest of the structure, the contractor used form panels varying from 2×3 feet to 2×8 feet in size for most of the walls and galleries. The steel-framed plywood panels were easily handled and set in place. It was important that the forms could be moved by hand, since much of the area inside the structure could not be reached by crane. The

ONLY CATERPILLAR GIVES YOU

THE OIL

Here is what you should know about its money-saving and operating advantages

How much better is the exclusive Caterpillar oil clutch than the ordinary clutch? It can be summed up in this short statement:

When the Caterpillar oil clutch is ready for *adjustment*, the ordinary clutch is ready for *replacement*. Experience in the field proves it.

In the years since 1954, when Caterpillar introduced this remarkable advance in earthmover power trains, owners all over the country have reported thousands of hours of oil clutch operation free of adjustment or repair.

Typical of these reports is this one from Myron Omernik, land improvement contractor of Custer, Wis.: "Our D7 has operated 5,100 hours without any oil clutch repairs or adjustment."

This performance record means two clear-cut money-saving advantages:

1. Virtual elimination of down time caused by clutch failure.

2. Greatly reduced repair costs.

But in addition to its economy features, the oil clutch also provides superior operation. Here is why:

1. A hydraulic booster on the D9 and D8, operate by clutch oil pump pressure, takes the effort out clutch operation but retains clutch "feel."

2. Clutch "fade" because of overheating is pra tically eliminated. The oil in which the clutch par run is pumped directly from the crankcase. Th means the clutch temperature never rises abo engine temperature.

3. A clutch brake helps match clutch and tra mission speeds—making shifting easier.

Here, in brief, is how the oil clutch works:

Three metallic-faced plates are separated by films at all times except for the last revolution two as the clutch is engaged. Oil enters the in diameters of the clutch plates and circulates betwe them by means of grooves in the clutch facings, carr ing away heat and reducing wear. All clutch par are constantly running in oil.

The exclusive Caterpillar oil clutch is not "extra"—it is *standard equipment* on the D9, D D7 and D6 Tractors, all Traxcavators, on the No. Motor Grader and on the MD6 and MD7 Pipelayer Yet it is an "extra" in *value* that is unmatched i the industry.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A

IMPORTANT OIL CLUTCH FEATURES

Independent oil pump assures positive lubrication and cooling for clutch plates, bearings and other vital moving parts.

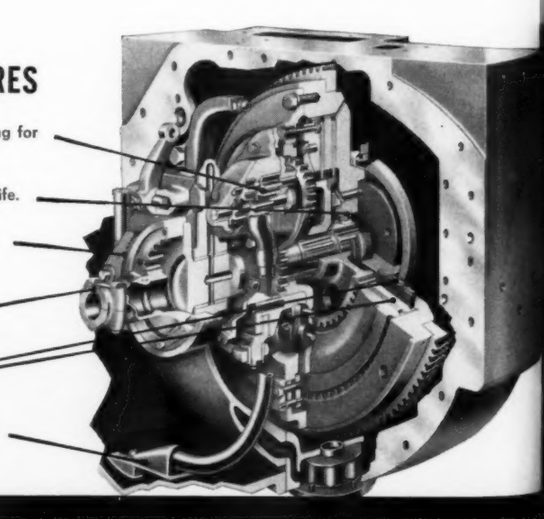
Heavy-duty bearings have extra capacity for long service life.

Clutch brake helps match clutch and transmission speeds—makes shifting easier.

Removable coupling allows clutch to be removed without disturbing engine or transmission.

Double clutch plates are metallic-faced for heavy-duty torque transmission.

Intake screens protect the oil pump from foreign material.



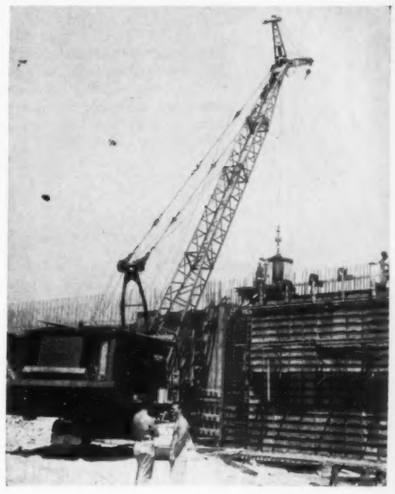
32-foot-high outside wall, which was poured in two lifts, was formed entirely with these form panels.

To support the floor of the filter chamber as well as other elevated slabs, Gust K. Newberg went to adjustable tubular scaffolding. This was convenient to erect and adaptable to varying floor grades. The rigid scaffolding sometimes rose as high as 21 feet to support the deck forms.

Pouring walls and floors

In order that expansion cracks be avoided, the spex prohibited the pouring of more than 75 feet in any one direction in any one pour. No concrete could connect with a pour until 24 hours had elapsed. This greatly restricted the size of the pours and made the complicated structure more difficult to build. At each construction joint, a rubber waterstop had to be installed.

Two cranes were generally kept very busy making separate pours to the upper level. The cranes bucketed the concrete from transit-mix trucks to collection hoppers. Hand buggies were used to bring the concrete to the forms. In spite of the scattered pours, the contractor was able to place from 500 to 700 cubic yards in a day.



Work is in earlier stages on the west unit of the substructure. A Bucyrus-Erie 38-B with Gar-Bro 2-yard bucket lifts concrete to a collection hopper for a floor pour. In this unit of the plant, the first 19-foot lift of the outside wall is formed with Universal panels.

Credits

The over-all design of the plant is being done by the Filtration Design Division of the Bureau of Engineering in the Department of Public Works, City of Chicago. Naess & Murphy of Chicago made the general architectural studies for the entire plant and are preparing detailed plans for certain units. Paul Rogers & Associates, also of Chicago, prepared the detailed construction drawings on the filter substructures.

George S. Salter is engineer in charge of filtration design. Ernst Stromback is engineer of waterworks construction. Carl Riggenbach is assistant engineer of waterworks construction. Arne L. Anderson is resident engineer.

For Gust K. Newberg Construction Co., John Hamrin is superintendent. Assistant superintendents are Bill Hamilton and A. S. Dalton. THE END

Bridge-deck design topic of HRB bulletin

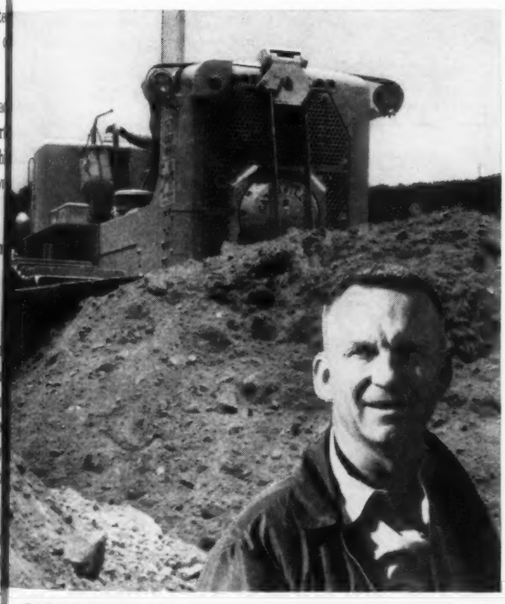
"Studies in Composition Design of Steel Beam and Concrete Bridge Decks", Bulletin 174, may be purchased for 80 cents from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

The bulletin contains two papers. The first outlines the background and development of the new specifications for composite steel and concrete bridges from the American Association of State Highway Officials. The second paper describes testing a composite beam structure using different types of shear connectors. Tentative design recommendations are made on the basis of these tests.

Austin Co. appoints

Harry E. Eiber has been appointed a vice president of The Austin Co., engineers and builders of Cleveland, Ohio. As manager of special steel industry projects since 1949, Eiber has been responsible for the design and construction of extensive service facilities for the Indiana Harbor Works of Inland Steel Co.

CLUTCH



CAT D9 TRACTOR: "We have operated this Cat D9 Tractor for 4,000 hours in the toughest kind of work without any repairs to the oil clutch," says Frank Hill of the Silva & Hill Construction Co., Los Angeles, California. "I just wouldn't consider buying a tractor without it now."

CAT NO. 955 TRAXCAVATOR: "In over 4,000 hours on our two hard-working No. 955 Traxcavators, we have made only one simple adjustment on an oil clutch and that took only about a half hour. It's much simpler than the old friction-type clutch," says M. J. Lutz of Bethel Park, Pennsylvania.

OWNERS REPORT TROUBLE-FREE OPERATION

CAT NO. 12 MOTOR GRADER: "Our No. 12 is starting its third season without interruption due to clutch trouble." With only one clutch adjustment in over 2,000 hours, Francis Bloomer, President of the John F. Bloomer Co., Appleton, Wisconsin, says, "We like the No. 12 with the oil clutch." This company, with 35 years of road construction work, owns a fleet of Cat-built equipment consisting of No. 12s, D9, D8s, DW21s.

CATERPILLAR

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LEADER IN EARTHMOVING RESEARCH

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A Cat DW21 scraper is pushed by a D9 at a good rate of speed so that it will not bog down in the soft, wet material of one of the cuts. At this high altitude in Yellowstone National Park, the silty ground holds a great deal of water, even during midsummer days.

Scrapers move at fast clip to load wet material from cuts

Winding through the extreme northwest corner of Yellowstone National Park, U. S. 191 carries many tourists and park visitors through the scenic Gallatin Gateway area to and from the West Yellowstone entrance. A 5-mile section of this highway crossing Divide Creek Pass is being rebuilt under a $723,340 contract awarded by the Montana State Highway Commission to Peter Kiewit Sons' Co., Sheridan, Wyo.

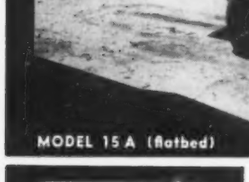
All of this contract lies within the park boundaries, but the highway is not within the park gates and is not classified as a park road. There are actually several points on the new alignment which touch or penetrate the state of Wyoming.

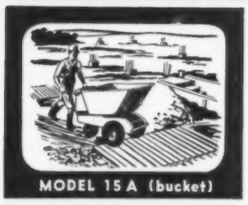
The heavily wooded area gets a lot of snow in winter. The vegetation and the silty ground hold the water like a sponge so that, even in midsummer, the soil is often saturated. When a cut was stripped and opened, it was not at all unusual to have a spring boil right out of the middle of it. Draining these springs and drying out the wet soil were two of the contractor's major problems.

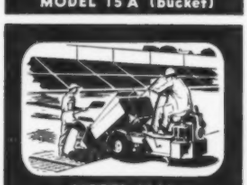
At this high altitude—Divide Creek Pass reaches elevation 7285—the working season is short. The working season is also the tourist season, which means an additional problem for the contractor. Although a substantial part of this job is on new alignment, there are several intersections with the old road and a number of places where traffic had to be carried through the job during the construction period.

Open cuts to dry soil

One of Kiewit's crews had cleared the right-of-way the previous fall under a separate contract, and the grading crews, knowing the conditions, started right in on the bad spots. Drainage ditches were constructed to dry the wet areas. Where wet materials were anticipated, the







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than any other powered buggy. Outside or under roof, Model 15A PRIME-MOVERS put your materials where you want them. Little or no preparation required as these units use same runways, ramps or hoists you now have. Triple output of labor with same manpower. Regardless of the stage of your job, you can show immediate profit in placing concrete, brick or tile with PRIME-MOVERS.

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Please send job reports, estimating data and literature on PRIME-MOVER equipment for:
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BRICK HANDLING ☐; Model____
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2,000
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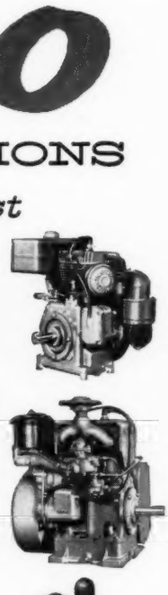


What does "tent coverage" of 2,000 service stations mean in terms of servicing Wisconsin Engines powering your construction equipment? In California, it means service facilities in 97 towns; in Texas, 61; Indiana, 32; down in Florida, 44; up in the New York City area, 24 stations.

Actually, in most areas, the distance between authorized Wisconsin Engine dealers can be measured in minutes. Couple this service coverage with the long life performance of Wisconsin Engines and you've got unbeatable construction equipment power within a 3 to 56 hp. range... single-cylinder, two-cylinder and V-type 4-cylinder models.

Write for bulletin S-198, pinpointing location of service stations. Tell us how many copies you need.

MOST H.P. HOURS

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

For more facts, use Request Card at page 18 and circle No. 217

New grade and base are built for mountainous highway through corner of Yellowstone Park in Montana

The scraper runs over a lift of wet material in one of the fills to aid in compaction. The No. 12 motor grader blades the fill material to dry it out.

cuts were pioneered and opened up early to expose as much material as possible to the air and sun for drying.

Pioneering was done by half a dozen tractor-dozers, which also opened many of the cuts. A dragline worked its way over the pioneer roads, digging drainage channels wherever possible. Sometimes this meant getting back into the woods, completely off the right-of-way, to intercept a water course or build a new channel to drain a water hole.

As soon as possible, a spread of four scrapers began moving the dirt. Push-loaded by a tractor-dozer, they handled the ordinary soils with ease. A ripper on the tractor opened up the tough spots and broke up a lot of rock for the scrapers to load.

Loading the scrapers in these soft spots was a tricky operation. The operators got their bowls into position and made contact with the push-tractor before they hit the soft ground. Then they carefully juggled their power against the depth of the cutting edge to keep moving ahead at a good rate of speed without spinning the wheels.

This maneuver also kept the big push-tractor in motion and kept it from digging itself down in the muck. This skillful coordination between scraper and pusher kept machines from getting stuck and allowed scrapers to pick up full loads in a minimum of time.

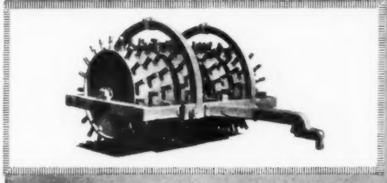
After skimming off what they could get in this type of operation, the scrapers moved to another part of the cut or to a new cut, leaving the wet material to dry out under exposure to the sun and air.

Although there were some high fills—ranging up to 50 feet—there were also several long and relatively low fills. These were well suited to taking the wet material. The scrapers spread the wet soil over large areas of these fills and then continued to travel back and forth over the fills. A tractor-dozer helped spread the loads as they were dumped, and one of the three motor graders on the project kept blading the surface of these embankments almost constantly. This blading kept the haul roads smooth for the scrapers and also served to keep the wet soil

(*Continued on page 27*)

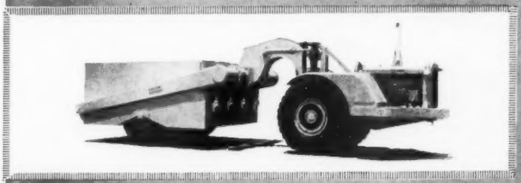
Southwest

Compaction equipment for every earthmoving job



HEAVY DUTY SHEEPSFOOT ROLLERS

SOUTHWEST heavy duty, ARCH TYPE full oscillating Sheepsfoot Tamping Rollers meet U.S. Engineers', Bureau of Reclamation and State Highway compaction requirements. Two models are available—10 to 25 tons. Arch type frame unitizes front tongue and rear cross frame to remove pulling strains from oscillating pins. Equipped with the new FORGED, Southwest two piece feet with replaceable tips, or solid wedge-type feet. Timken bearings throughout. 1" drum shells. 60" drum diameters.

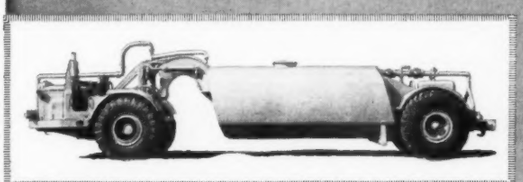


MULTIPLE BOX COMPACTION ROLLERS

SOUTHWEST multiple box, Pneumatic Compaction Rollers provide INDIVIDUAL VERTICAL OSCILLATION of wheels and weight boxes to assure uniform compaction regardless of soft spots, stones or boulders in the fill. No bridging or shifting of load from tire to tire because weight boxes oscillate independently. Contractors report TIRES LAST OVER 3 TIMES LONGER with multiple box type as compared to conventional single box design. Available in five models from 10 to 100 tons. Adaptable to any tractor.

VERTICAL-PAK SELF-PROPELLED ROLLERS

SOUTHWEST Vertical-Pak provides INDIVIDUAL VERTICAL OSCILLATION of rear wheels for the first time in self-propelled machines. Exclusive design affords uniform compaction on uneven surfaces, and new compaction efficiency. Seating arrangement and REVERSE-O-MATIC transmission place operator in a position to see both forward and rear operations. All five rear wheels powered through SELF-LOCKING differential chain drives.



SEMI-TRAILER SPRINKLER TANKS

SOUTHWEST Sprinkler Tanks are available in two models—5,000 and 6,000 gallon capacities—and may be adapted to any make two or four wheel tractor. Equipped with front and rear spray bars, plus gravity bar, these units provide a spray width up to 55 feet. The 6" self-priming centrifugal pump, with in-seat air-actuated controls, has a 1500 gpm capacity. Powered by 6-cyl. gasoline engine. Pressure bar nozzles are adjustable. Large tires assure adequate floatation.

HEAVY DUTY CABLE-OPERATED RIPPERS

SOUTHWEST heavy-duty Rippers are available in four sizes, from 5,000 to 25,000 pounds. Structural features, such as box beam sections of special design, are constructed to withstand the most severe job conditions. Predetermined and set angle of the three ripper shanks assure quick, positive penetration up to 48 inches. Special center shanks can be furnished for 60 inch penetration. Shanks are of special heat treated steel. Points are hardfaced and replaceable. Wheels are drum type, Timken bearing mounted. COMPACTION IS BEST WHEN YOU USE SOUTHWEST.

Southwest PRODUCTS ARE SOLD AND SERVICED BY YOUR CATERPILLAR® DEALER

CONSTRUCTION MACHINERY DIVISION
Southwest Welding & Manufacturing Co.
ALHAMBRA, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 218

Stretch Dollars – Save Manpower with equipment that does more...

WORK BULL 1001

CONVERTS INTO EIGHT DIFFERENT MACHINES AND OUT-PRODUCES EXPENSIV SINGLE-PURPOSE EQUIPMENT

Davis 210 Backhoe on Work Bull 1001 has its own backfill blade; same machine handles digging and backfilling.

The Work Bull 1001 as a rotary broom has 96" swath, 30° left and right hydraulic angle control.

Work Bull 202 and Davis Loader-Backhoe have been integrated for maximum efficiency.

UNEQUALLED VERSATILITY The Work Bull 1001 obsolete single-purpose machines that sit idle most of the time. This top-quality 60.3 h. p. rig converts from a 7/8 cubic yard Loader to a Pick-u Sweeper ... to a Backhoe (with its own backfill blade) ... Fork Lift.. Crane ... Angle Dozer ... Rotary Broom ... and back to a Loader an Scarifier right in the field. Each performs so efficiently you will thin it is intended for just that one purpose.

INSTANT REVERSING WITHOUT SHIFTING To change direc tion of travel on the Work Bull 1001 you simply switch your foot fro the forward acceleration pedal to the reverse acceleration pedal. N gears or levers to move. This, plus power steering, torque converte five-speed transmission in either direction, and left and right brake lets you work circles around other machines.

43° ROLLBACK AT GROUND – DIRECT LINE THRUST Yo actually get "bull-dozer" action when digging plus more breakaway Special shock load absorbers reduce spillage and cushion load in roug terrain. Also has "float" position so attachment can ride over the surfac on which it is working.

LOW PACKAGE PRICE It costs so little to own a Work Bull 100 Select the basic unit and whatever attachments you need. It will cos you less than what you normally pay for a single-purpose machine.

OTHER POWER MATCHED MASSEY-FERGUSON EQUIPMEN include the Work Bull 202 (40 h. p.) Tractor, Work Bull 303 (54.5 h. p. Tractor, Work Bull Fork Lift, Davis Loader and Backhoe, plus a multitud of integrated attachments for each basic unit.

For information on the complete Massey-Ferguson line ask for Brochure G-4. For specific information on the Work Bull 1001 ask for Brochure W-1. *Write Massey-Ferguson Industrial Division, 1009 South West Street, Wichita 13N, Kansas.*

MASSEY-FERGUSON INDUSTRIAL DIVISION

For more facts, use Request Card at page 18 and circle No. 219

(Continued from page 25)

turned over and mixed with dry material.

Rock excavation

About a fourth of the 500,000 cubic yards of unclassified excavation in the project was rock which had to be shot. Blast holes were drilled 4½ inches in diameter for 20-foot lifts, and the rock was shot with TNT and dynamite. Blasted rock was loaded out by a shovel to three 15-yard end-dump Euclids.

This shovel and "Euc" spread also dug out some of the wettest potholes and peat holes that were too difficult to get with the scrapers. This wet muck was wasted at the edges of some of the high fills.

Where the new alignment crossed Divide Creek in two places, the contractor installed triple Armco Multi-Plate arch culverts. In both cases, each of the three pipes had a span of 10.25 feet and a rise of 6.75 feet. One of the crossings was 108 feet long and the other, 136 feet long. In addition to these two big culverts, there was a large number of smaller culverts and underdrains.

Kiewit's spread of grading equipment on this job included: Six tractor-dozers, both D8's and D6's, four Cat DW21 scrapers, a Cat D9 with Ateco ripper, three Cat No. 12 motor graders, a Joy T-500 drill using Joy carbide insert bits, three Euclids, two Ford watering trucks with 2,500-gallon tanks, and both sheepsfoot and pneumatic rollers.

Crushing and screening equipment supplying the job was made by Cedarapids. The 3240 jaw crusher was powered by a General Motors 6-71 diesel engine, the 1036 secondary unit by a Cat D8800 engine, and the 4024 third stage unit by a GM 6-110 engine.

Base construction

The Kiewit contract includes crushed-rock base and bituminous surfacing as well as the grading. The finished base, which has a 32-foot-wide top, is being given a double penetration treatment under this contract. A 24-foot-wide bituminous pavement will be added later.

A foot of base material is being placed over the compacted grade. The bottom 10 inches consists of minus 3-inch crushed gravel, placed and compacted in three lifts. The top is a 2-inch cushion of minus ¾-inch rock. The completed cushion course is penetrated with a prime of MC-2 cutback asphalt placed at a rate of 0.33-gallon per square yard. Half-inch crushed cover material is spread over this prime coat at 26 pounds per square yard. The second bituminous application, also at a rate of 0.33-gallon per square yard, is of RS-2 emulsified asphalt. This is followed by another application of cover material.

(Continued on page 30)

At the end of one of the long fills on the 5-mile section, the DW21 unloads the wet material while a Cat D8 tractor-dozer spreads and shapes it.

FAST... RUGGED HIGHWAY HAULER

CLEMENT BOTTOM-DUMP TANDEM TRAILER

You can put more profit into highway construction jobs when you haul in a Clement Bottom-Dump Tandem Trailer.

Clement's rugged design provides maximum strength with minimum weight. Full frame construction wrapping around the rear of the trailer braces the body against torsional stresses. Sharply tapered hoppers with full width doors dump every type load cleanly and quickly. Doors may be installed to operate manually and tripped by workmen as the trailer moves through the dump area, or from air-actuated cab controls.

Built to dump-on-the-run, Clement Bottom Dump Trailers, both 15-yard tandem models and 10-yard single axle units, have been carefully streamlined to eliminate dangerous wind whipping of loads during fast highway hauls.

Put more profit in your next highway construction job . . . contact your nearest Clement distributor or write direct, today!

DESIGNED by Clement, oldest manufacturer of frameless end-dump trailers, both cable-lift and hydraulic-lift models.

Limited number of Clement distributors open to qualified heavy equipment dealers in Atlantic Seaboard states.

CLEMENT-BRASWELL, INC.
Shreveport, Louisiana
PLANT: Minden, Louisiana

Clement

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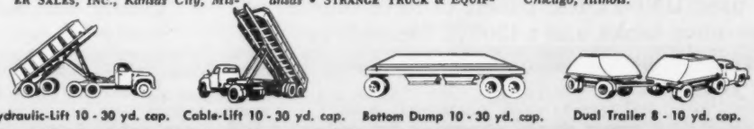
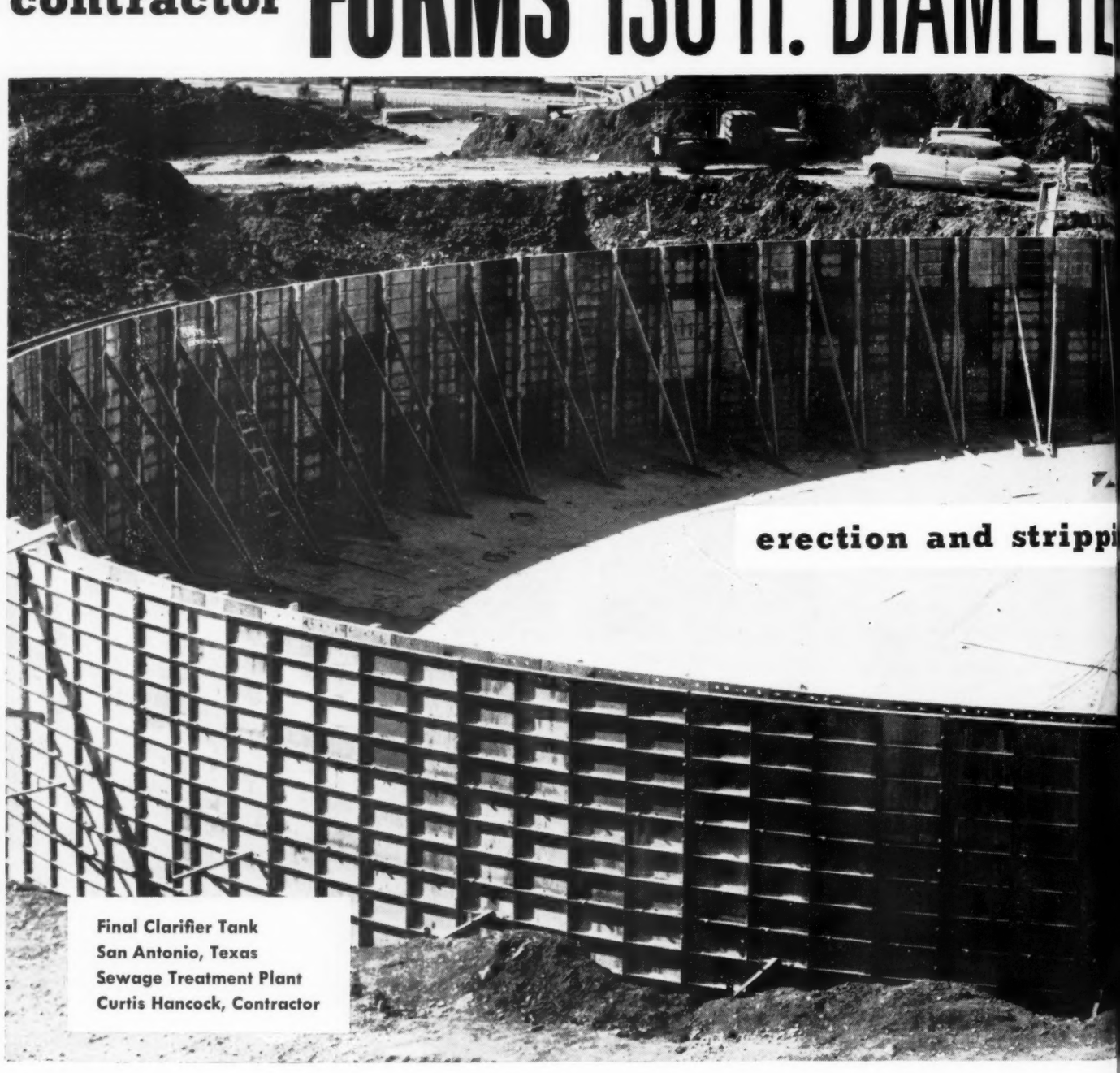


Hydraulic-Lift 10 - 30 yd. cap. Cable-Lift 10 - 30 yd. cap. Bottom Dump 10 - 30 yd. cap. Dual Trailer 8 - 10 yd. cap.

For more facts, use Request Card at page 18 and circle No. 220

contractor FORMS 130 ft. DIAMETE



erection and strippists

Final Clarifier Tank
San Antonio, Texas
Sewage Treatment Plant
Curtis Hancock, Contractor

When a contractor can erect, align, and brace the forms for a 130 ft. diameter, 13 ft. high tank in *a single 9 hour day* — that's speed! And when *total costs* for erecting are only 19c per sq. ft. — that's economy!

This is the record of pre-fabricated UNI-FORM Concrete Panels used by Curtis Hancock in forming a final clarifier tank for the new 12 million dollar San Antonio, Texas sewage treatment plant expansion program.

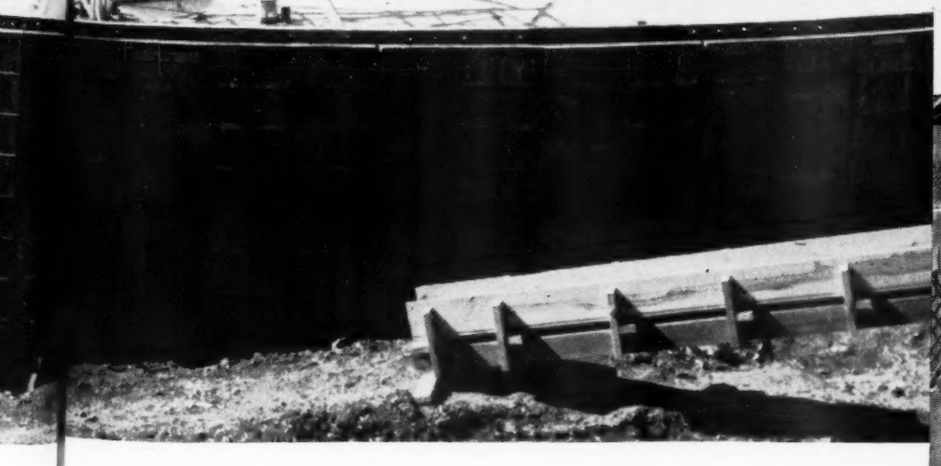
In addition to UNI-FORMING the circular tank, Hancock used UNI-FORM panels to form four 30 ft. x 300 ft. aeration tanks, and a 1300 ft. concrete by-pass tunnel — approximately 135,000 sq. ft. of contact area in all.

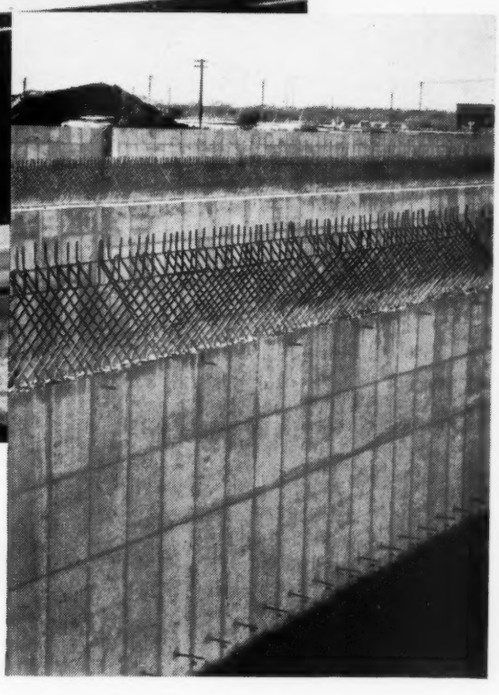
In comparing the performance of UNI-FORM Panels on this job to a similar one done previously with forms he had built himself, Mr. Hancock estimates that he has saved at least four days in time alone!

It's performance like this that sells contractors and engineers on UNI-FORM panels. No other method of concrete forming can give you faster ground-to-ground forming speed, efficiency, flexibility, and economy. Why not investigate the advantages this modern concrete forming system can bring you? Our strategically located Branch Offices and Distributors are ready to demonstrate and prove the advantages of UNI-FORM Panels to you. *Write for the new UNI-FORM Panel Catalog today.* .

ETANK 13 ft. HIGH in 9 HOURS

ippists — 19c per sq. ft.!





UNI-FORMED WALLS ARE CLEAN

SEND FOR NEW CATALOG 758 TODAY

UNIVERSAL FORM CLAMP CO.

1238 N. KOSTNER • CHICAGO 51, ILLINOIS

CONCRETE FORM SPECIALISTS SINCE 1912

BRANCH OFFICES AND WAREHOUSES

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ATLANTA, GEORGIA 1401 Howell Mill Rd., N.W.

Universal Form Clamp Co. of Canada, Ltd., 226 Norseman St., Toronto, Ontario

For more facts, use Request Card at page 18 and circle No. 221

(*Continued from page 27*)

Both types of base material and the cover material were produced by a crushing and screening plant set up in a pit beside the right-of-way near the middle of the job. A tractor with a U-dozer pushed the gravel, which contained a large percentage of oversize "hardheads", to the 42-inch×10-foot apron feeder supplying the 3240 primary crusher.

A belt conveyor carried the rock to a secondary unit where a 4×10-foot double-deck screen separated the oversize and shunted it to a 1036 jaw crusher.

Another conveyor carried the rock to the third stage unit, consisting of a 4024 roll crusher in closed circuit with a 4×12-foot double-deck vibrating screen.

The 3-inch base material was taken right off the belts by three Euclid bottom-dumps and hauled out on the road. The ¾-inch cushion material was fed out to one side of the plant by a belt and stockpiled for later use by a tractor-dozer. When the plant was making cover material, trucks hauled to the stockpiles. On the base stone, the plant produced about 120 tons per hour of finished material.

On the road, the base material was watered by two trucks carrying 2,500-gallon water tanks, mixed and spread by the motor graders, and compacted by sheepsfoot and pneumatic rollers.

Personnel

Serving Peter Kiewit Sons' Co. as project superintendent was J. C. "Sully" Willis, who reported to W. H. McNeal, area manager under the Sheridan, Wyo., office. Others on the supervisory staff were general foreman Alec Karst, grade foremen Gerald Acton and Lyman Tippits, crusher foreman Orville Bronson, and drilling foreman Dave Cavander.

Project engineer for the Montana State Highway Commission was John J. Anderson. His assistant was E. W. Esp. The project is in the Bozeman Division for which Louis Chittim is district engineer. Fred Quinnell, Jr., is state highway engineer, and Lehman B. Fox, construction engineer for the Commission.

THE END

Air Reduction opens Massachusetts plant

Air Reduction Sales Co., Division of Air Reduction Co., Inc., New York City, has opened a new plant for the production of liquid oxygen, nitrogen, and argon. Located at South Acton, near Boston, Mass., the new air-separation and liquefaction facility will produce 75 tons of liquefied gases per day.

The $9 million plant is of concrete block and Transite siding construction.

Blitz, Inc., appoints

William Bronson has joined Joseph P. Blitz, Inc., New York City building construction firm. He will be construction manager in charge of public works.

Condemning property for highway purposes

The Highway Research Board has issued Special Report 32, "Condemnation of Property for Highway Purposes: A Legal Analysis, Part I". The report covers four aspects of the topic: delegation of the power of eminent domain, property which may be taken, legal interest which may be taken, and the designation of the procedure to condemn.

The four aspects of condemning property for highway purposes are discussed with each chapter: state highway departments; counties; cities, towns, and villages; and special authorities. Three appendixes—summary of law by states, statutes cited, and cases—conclude the reports.

Priced at $2.40, the report may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

C. I. T. opens office

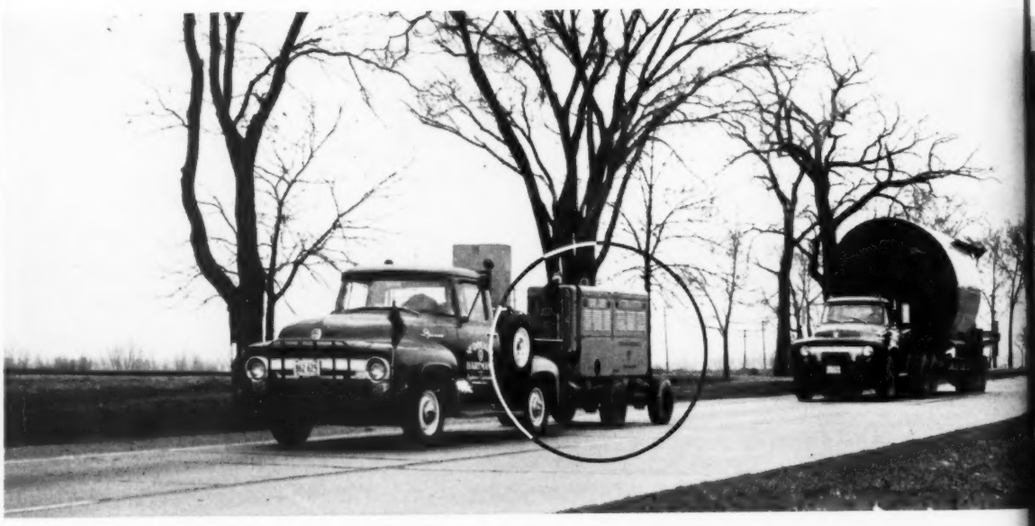
A new division office in Seattle, Wash., has been opened by the C. I. T. Corp., New York, N. Y. F. L. Conrad, an assistant vice president, heads the office, which serves Washington, Montana, and northern Idaho. Conrad will be aided by W. G. Duncan, assistant secretary of the industrial financing firm.

Equipment school re-elects officers

Gilbert Shaw has been re-elected president of the Western National School of Heavy Equipment Operation, Weiser, Idaho. Also re-elected were William Foss, vice president; Lloyd Babler, secretary-treasurer; B. L. Jack, assistant secretary-treasurer; and Gordon MacGregor and Fred H. Slate, directors.

The school offers six courses in the operation and maintenance of earth-moving equipment. It is a counterpart of the National School of Heavy Equipment Operation, Charlotte, N. C., also headed by Gilbert Shaw.

Cat power saved these owners $1,30



1 McDougal-Hartmann Co.'s, Heltzel Bin Hardy and Johnson Automatic Batching Plant follows their 40 KW Cat D315 Portable Electric Set to its fourth job site. Savings during the first year of ownership while moving them, alone have amounted to $3,900. Operational savings are not even included. The owners estimate that running in and hooking up to public utility power would have averaged at least $1,300 per move. An additional $1,200 was saved at the outset since the Electric Set would operate the plant's higher voltage electric motors which were supplied as original equipment.

2 At a previous job location in Sterling, Illinois, this unit produced 86.4 batches per hour for use on one of the firm's nearby road construction jobs.

Without portable power, it often requires the more common technique of setting up the batch plant along a railroad siding or right-of-way, bringing in materials by rail if the haul distance to the job is not excessive. Concrete specifications in some states limit the haul distance of mixed concrete due to the time element. All in all, Cat portable power saves operating time, cuts costs.

3 Many contracting companies with multi-state opera tions, such as McDougal-Hartmann, require powe portability to avoid the frequent high cost and inconve ience of obtaining power in remote areas.

On their present job it would have necessitated string ing poles and wire from this power line to the plant loca tion (in the circle). Instead, the highly mobile Cat Electri Set was rolled up alongside the batching plant, an hooked up with wall plug simplicity ready to go.

Aluminum girder-type bridge built as developmental project

The first aluminum girder-type highway bridge in the world is expected to be finished this month near Des Moines, Iowa. The 222-foot-long four-span continuous aluminum girder structure, 36 feet wide, has a 30-foot reinforced-concrete deck to carry traffic across a four-lane interstate express highway.

A developmental project to demonstrate the advantages of aluminum as a bridge building material, it is jointly sponsored by the Iowa State Highway Commission and the Aluminum Co. of America, Kaiser Aluminum & Chemical Corp., and Reynolds Metals Co.

The girder system was fabricated by Pullman-Standard Car Mfg. Co., Chicago, and shipped in four big subassemblies, each consisting of an exterior and interior girder with connecting diaphragms. The units are approximately 12 feet wide and range from about 95 to 126 feet long. Three railroad cars, a gondola centered between two flat or idler cars, were required for each of the subassemblies, for a total of 12 cars in all for the shipment.

Fabrication

The inert-gas, shielded arc welding process was employed to fabricate the structurals. Four longitudinal girders and connecting diaphragms were fabricated from high-strength weldable alloy plate ranging in thickness from ½ inch to 1¾ inches.

A typical main girder has a web ½×36 inches, a lower flange 1¼×18 inches, and an upper flange ¾×12 inches. A typical diaphragm has a ½×23-inch web and 1×10-inch flanges.

A flange is welded to a web to form an aluminum girder for the world's first aluminum girder-type highway bridge near Des Moines, Iowa. Fillet weld is being made on both sides of the web simultaneously at the Chicago plant of Pullman-Standard Car Mfg. Co.

Erection

After the abutments and piers were placed, the girder system was bolted, the concrete deck poured, and the aluminum railings installed. Four continuous longitudinal girders, spaced 9½ feet apart by diaphragms, support the roadway. The concrete deck is tied rigidly to the girders with aluminum shear connectors to achieve composite action.

In addition to eliminating costly maintenance, it is anticipated that the bridge will demonstrate structural and fabrication advantages of aluminum. Because of the metal's light weight, it was possible to ship and assemble the relatively small number of large shop-fabricated units for the bridge. Aluminum also offers certain structural advantages when used for members designed for composite action with the concrete road slab, permitting a reduction in aluminum weight.

The bridge was designed by Ned L. Ashton, Iowa City consulting engineer, under the direction of the Iowa Highway Research Board and the Iowa State Highway Commission. General contractors were Jensen Construction Co. and United Contractors, both of Des Moines. THE END

ach time their batching plant moved

4 Performance and savings with this plant brought Mr. Jack Hartmann, Vice President (right), and Bud Moore, his C.D.E.S. (Caterpillar Dealer Engine Specialist), out to the job to plan a second batching plant installation. Satisfaction resulted in an order for a second identical Cat Electric Set for this contractor's expanding operations.

Mr. Hartmann remarked, "ABOUT ONE MORE MOVE AND OUR FIRST PORTABLE ELECTRIC SET WILL HAVE PAID FOR ITSELF IN SAVINGS FROM MOVES ALONE AND IN LESS THAN TWO YEARS. THAT WE LIKE TO SEE."

Engine Division, Caterpillar Tractor Co., Peoria, Ill., U.S.A.
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

5 The all-new, self-regulated generator for Cat Electric Sets is simple to operate. Voltage is adjustable from 5% above to 10% below nominal rating and regulated within 3½% of rated voltage. It has unsurpassed motor starting ability. Other performance features Mr. Hartmann liked were:

1. Low over-all cost per operating hour.
2. No down time due to power failure or engine failure.
3. No additional help required, due to the unit's simplicity and self-regulating standard equipment.
4. Advertised power produced and maintained.
5. His Caterpillar Dealer Engine Specialist, Parts and Service teams were on around-the-clock availability if anything went wrong. It didn't.

ENGINE POWER BY CATERPILLAR

If something has gone wrong with your present engine or it just won't produce in your excavator, crusher or other construction machinery, talk it over with your C.D.E.S. He can aid you profitably when repowering older machines or specifying engines for new equipment.

Engine Division, Dept. CT8
CATERPILLAR TRACTOR CO., Peoria, Illinois, U.S.A.

Send me more information about the new Caterpillar Portable Electric Sets. I understand that I am under no obligation.

☐ I would like more detailed information as I may be in the market for a Caterpillar Construction Engine.

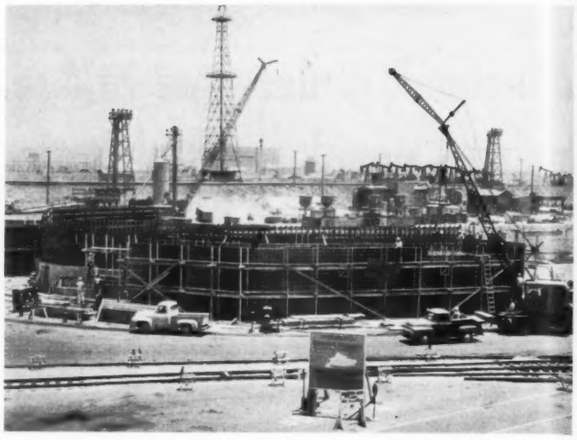
Name_____

Company_____

Address_____

City_____ Zone____ State_____

Remedial works protect subsiding Navy shipyard



Raising the huge 1,105-foot-long Moreell dry dock by 17 feet at the land end and 11.7 feet at the seaward end is one of the big jobs involved in the remedial program that will protect the Long Beach Naval Shipyard against subsidence caused by the removal of oil, water, and gas from the oil field underlying the area. At right, a Lorain crane is lifting a plywood form panel into place. Note oil wells, background.

Like the legendary Atlantis, a large area of the port of Long Beach, Calif., has been settling into the sea. Subsidence of more than 24 feet has already been recorded near the center of the elongated saucer-shaped area, and experts predict that the drop will be 30 feet or more by 1970.

Located near the center of the area is the Long Beach Naval Shipyard, a vital $170 million installation which includes large piers, dry docks, and other facilities for the maintenance and overhaul of naval vessels. Much of the shipyard area has already dropped below high-tide elevation and would be inundated but for emergency protective measures taken in past years.

Having determined the economic feasibility of preserving the installation, the Navy is now engaged in the first increment of a remedial program to protect the shipyard and keep it in operation. A $7 million contract with the joint venture of Connolly-Pacific Co., Long Beach, and T. E. Connolly, Inc., San Francisco, is the first phase of the program which may cost $25 million and will probably require four years or more for completion.

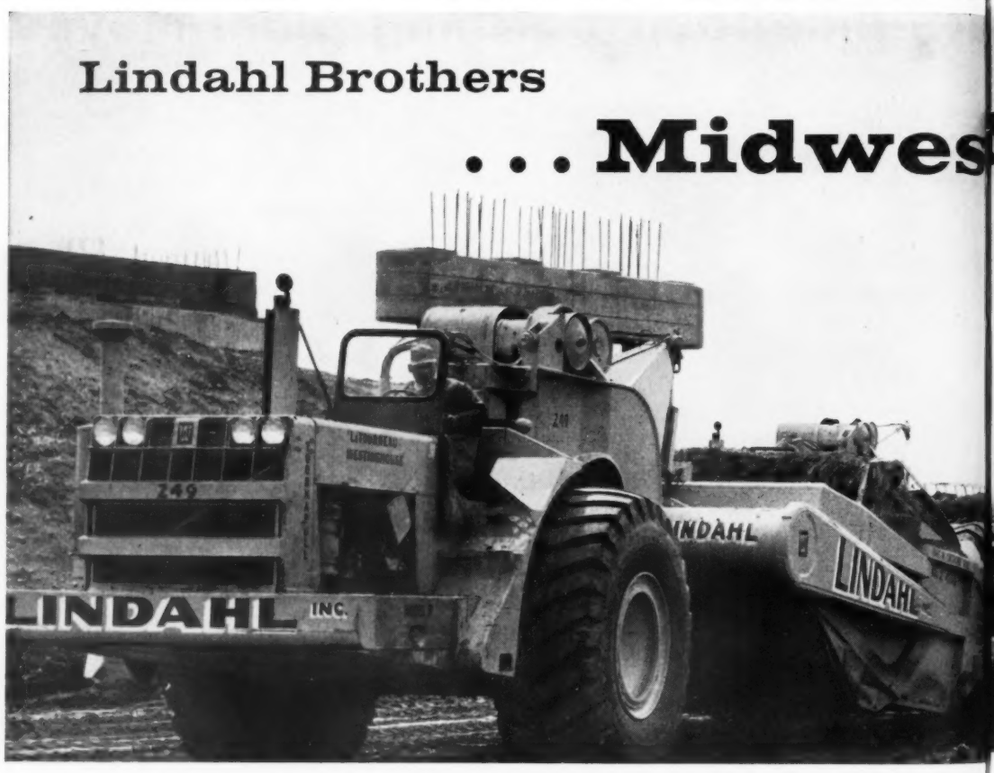
Subsidence

When the shipyard facilities were constructed during World War II, a freeboard of about seven feet above maximum high tide was allowed. Within a few years, the subsidence was discovered, and it has continued at rates up to a foot per year. Studies by a number of experts almost unanimously agree that the subsidence is caused by the removal of oil, water, and gas from the rich Wilmington Oil Field which underlies the area.

The present remedial construction program is aimed at protecting the installations against the subsidence expected by 1970. At that time, it is anticipated that the oil reserves of the field will be exhausted and that repressurization of the underground area will prevent further settlement.

Huge dry dock raised

Since the maximum subsidence is in the northeast section of the shipyard, the facilities in this area are being protected under Connolly's first increment contract. The major units concerned are the huge Moreell dry



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Before the new structures could be erected around the dry dock, old concrete was broken out by this "air stomper". The big air cylinder is mounted vertically on the truck. A heavy breaking shoe is attached to the piston rod. As the truck moves along, the ram is actuated to shatter the concrete.

The old concrete has been cleared away, and crews are driving Macco Spunpile prestressed-concrete piles to support the new structure. Macco Corp., Paramount, Calif., subbed the work of furnishing and driving the piles.

Mountain Movers

This shot shows part of the Lindahl fleet working near Belvidere. Right now the entire fleet is working on an 8-mile stretch up the line.

Here 'Bud' Lindahl, Jr. (*right*) and C.I.T. assistant vice president George Lear talk over some of the problems which were licked with the help of new equipment like the unit in the background.

dock and a 1,000-foot-long pier. The 1,105-foot-long dry dock is one of the few on the West Coast which will accommodate carriers of the Forrestal class.

The walls of the dry dock are being raised 17 feet at the land end and 11.7 feet at the seaward end. Included are the concrete structures which support the rails carrying the large shipyard portal cranes which serve the dry dock. Within these structures are the service tunnels carrying water, air, gas, salt water, steam, acetylene, oxygen, and electricity, as well as access tunnels for personnel and equipment.

Keeping the dry dock in operation throughout the construction period required careful planning and phasing of the work. The east wall of the dry dock was built up first, while the cranes continued operating from the west side. Then, two big cranes were set over onto the new structure while the west side of the dock was built up. Work along the waterfront and on the pier were sandwiched in with the dry dock phasing. One of the final operations was the placing of a new sill to bring the caisson at the entrance of the dock up to the new grade.

One of the early steps in construction was the removal of the old crane rails on the east side and the driving of piling to support the new structure. Connolly sublet the breaking of the old pavement to Emsco Concrete Cutting Co., Los Angeles, which used an air-powered breaker of its own design.

The rig, mounted on the rear of a truck, consisted of a big air cylinder mounted vertically with a heavy breaking shoe attached to the piston rod. As the truck moved slowly along, the operator on the rear actuated the ram and shattered the concrete. The compressor supplying air for the ram was also carried on the truck.

Broken concrete and earth were excavated by a Warner & Swasey Gradall and trucked to storage areas for later use as fill.

Drive prestressed-concrete piles

Connolly sublet the furnishing and driving of the piling to Macco Corp., Paramount, Calif., using Macco's prestressed-concrete Spunpiles. These piles are 10 inches in diameter at the tip, and widen to 16 inches in diameter

(Continued on next page)

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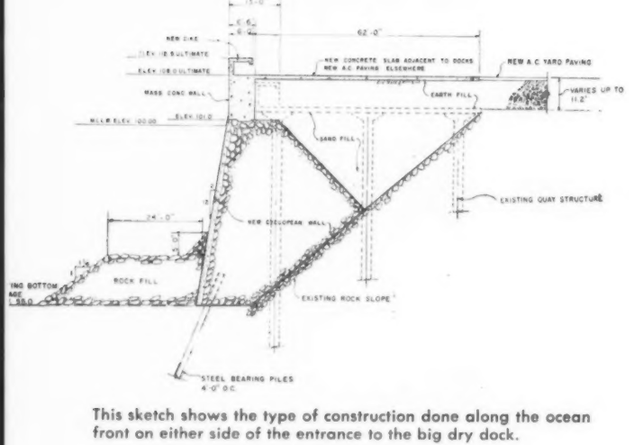

This sketch shows the type of construction done along the ocean front on either side of the entrance to the big dry dock.

Forming for the raised dry dock goes on in the shadow of the big shipyard cranes. A Lorain motor crane is lifting form panels to crews on the deck. The shipyard cranes were later moved over to the new structure by the Navy, which used a huge self-propelled floating derrick to make the big lifts. ►

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(*Continued from preceding page*)

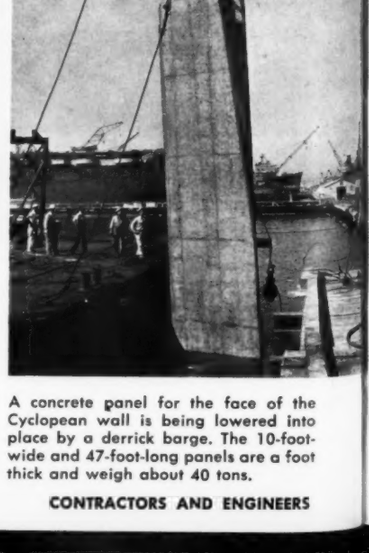
20 feet from the tip. The remainder of the length is 16 inches in diameter. Except for a solid 3-foot-long section at the tip, the piles have a hollow core about 8 inches in diameter. [*Ed. note: an article on the manufacture of the prestressed-concrete Spunpile will be featured in next month's prestressing issue.*]

The piles, in lengths ranging from 50 to 83 feet, were trucked from the Macco plant in Paramount to the shipyard. Most of them were driven by one of Macco's big steam-powered driving rigs, which used a Vulcan O hammer in 125-foot-long fixed leads.

Concrete construction

Because of the many variable dimensions in the structures, it was not feasible to prefabricate much of the framework. Most of the forms, built in place, were of ¾-inch Plyform sheathing on timber studs, with joists and wales fastened by W. J. Burke hardware.

Ready-mixed concrete was supplied by Consolidated Rock Products Co., Los Angeles, and placed by cranes using Gar-Bro 1-yard buckets. Among the cranes in use on the job were a Northwest 80D crawler, a Lorain 35-



A concrete panel for the face of the Cyclopean wall is being lowered into place by a derrick barge. The 10-foot-wide and 47-foot-long panels are a foot thick and weigh about 40 tons.

ton motor crane, and a Lorain 22½-ton motor crane, as well as several floating rigs. The concrete was consolidated by Viber air-powered vibrators.

One of the most interesting phases of construction was that for the new Cyclopean sea wall on both sides of the dry-dock entrance. This wall replaces the old quay structure, which consisted of a concrete deck supported on columns and with a riprapped slope beneath.

The new Cyclopean wall rests on the harbor bottom and against the existing stone riprap slope. Its toe is supported by a row of 12-inch steel H-piles, 60 feet long, which were driven at a batter. Connolly drove the piles east of the dry dock with a floating rig using a McKiernan-Terry S-8 submersible steam hammer. West of the dry dock, Macco used the skid rig with 125-foot leads and a Vulcan O hammer. Driving was done from the existing quay structure.

Concrete panels for the front facing of the wall were precast in plywood forms on shore. These panels were 10 feet wide, 47 feet long, and a foot thick, and they weighed about 40 tons each. They were picked up from the beds by truck cranes and loaded on truck-trailers which hauled to the waterfront. Here, the heavy panels were picked off and set in place by a floating crane. The panels were held in place and in alignment by a system of piling and falsework.

With the concrete panels in place, concrete and rocks were placed under water behind the panels to form the wall. Hooked bars left projecting from the back faces of the panels tied them securely to the Cyclopean concrete backing.

A conveyor and tremie system was rigged to place the underwater concrete. One end of the conveyor rested on the old quay structure, while the other end was suspended over the water, supported by a line from the boom of a barge-mounted P&H 1055 crane. The crane also held the hopper and 8-inch tremie pipe which guided the concrete down into place under water.

Cmetco concrete buggies delivered the concrete from transit mixers to a hopper feeding the 30-inch conveyor belt. The belt carried the concrete 45 feet out to the placing tremie.

Rock ranging up to two tons in size was picked up from government stockpiles along the Los Angeles River and hauled to barges near the shipyard. These rocks were clammed from the barges and placed in the concrete of the wall.

The Cyclopean structure extends from the bottom of the harbor up to about mean low water line. Above this elevation, a mass concrete wall extends up another 14 feet and is topped by a 4.5-foot-high dike wall. Sand and earth fill bring the area behind this wall up to grade to support the new concrete and asphalt pavements being placed under this contract.

Huge derrick moves cranes

When the structure on the east side of the dry dock was completed, two big shipyard portal cranes had to be transferred over to the new rails on top of this structure. Original plans called for one of the 50-ton portal cranes to be raised and placed on the new structure by the contractor. But jacking a crane into position appeared to be a time-consuming, dangerous, and costly operation, and the Navy decided to use its huge self-propelled floating derrick Titan to move the cranes from one side of the dry dock to the other.

The smaller of the two shipyard cranes that had to be moved was a 25-ton machine, weighing about 250 tons. The larger 50-ton portal crane weighs about 610 tons. The derrick Titan, which was captured from the Germans during World War II, has a rated capacity of 389 tons at 90 feet

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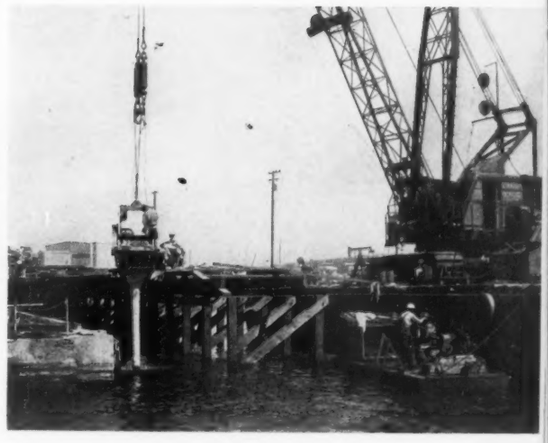
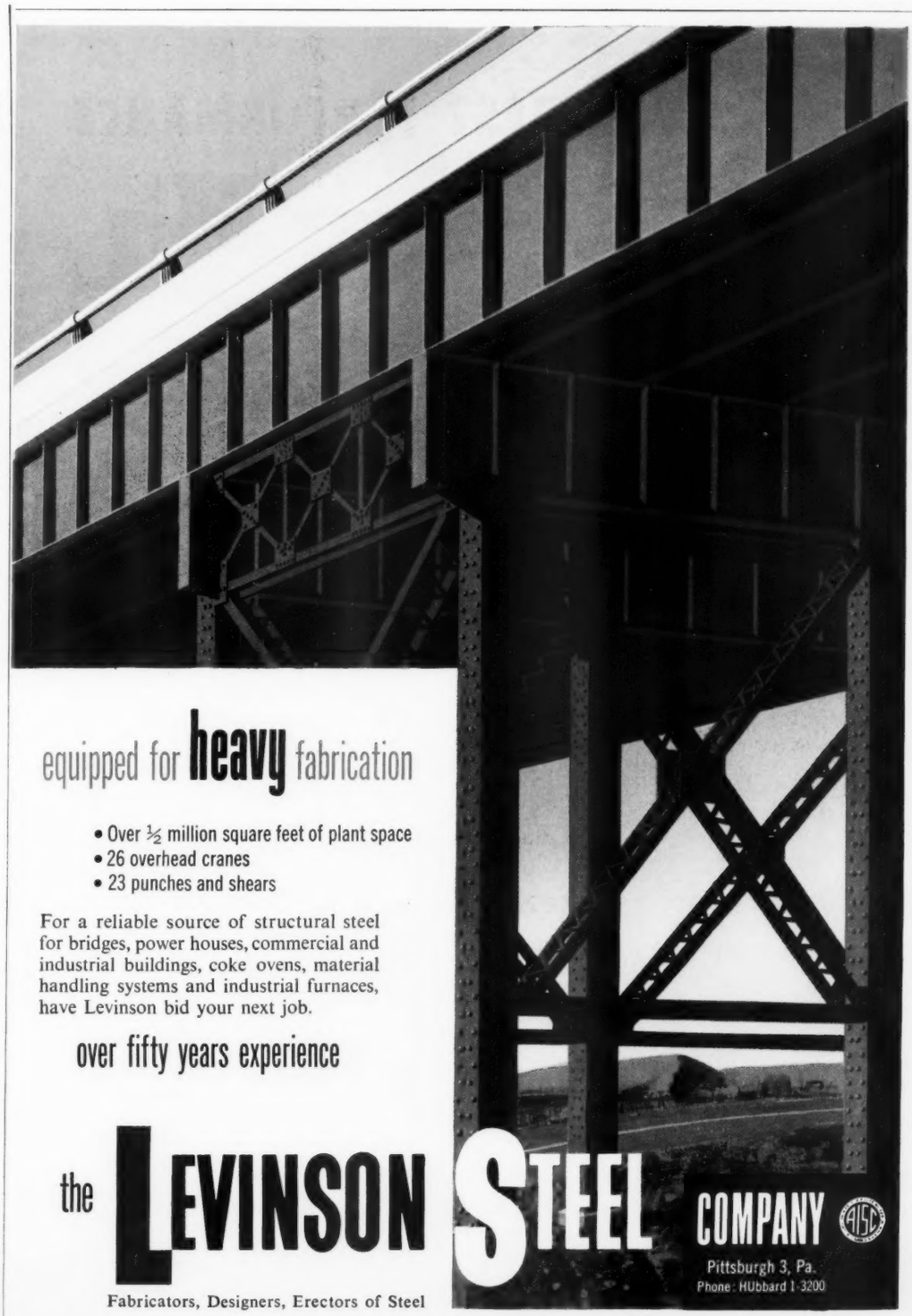


Connolly-Pacific's barge-mounted P&H 1055 holds tremies and a conveyor used to place the underwater concrete in the Cyclopean wall. At right, a diver prepares to go down and check the underwater concrete placement.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The second big job of the remedial project involves raising everything on this 1,000-foot-long pier. Two concrete buildings have been jacked up and underpinned, and work is starting on rebuilding the deck of the pier at the higher elevation, foreground.

(*Continued from preceding page*)

and has been tested by the shipyard at 425 tons. Its towering boom rises 375 feet above the water.

This huge derrick was floated into the dry dock. It picked up the 25-ton crane and set it in place on the new crane rails in a single lift. The heavier crane was transferred across the dry dock in two lifts. The big house with the operating mechanism and the crane boom were taken in one lift of about 410 tons. The gantry, weighing about 200 tons, was transferred in the second lift.

These two cranes were then free to return to their work in the dry-dock area while the contractor shifted operations to the west side of the dry dock and constructed a similar structure there. When the entire structure is completed, the cranes will be able to travel the full length of both sides of the dry dock and around the closed end. They will also be able to move out onto the pier.

Pier is raised

The work on the 1,000-foot-long pier consisted basically of building a new deck ranging from 6 to 10 feet above the existing deck. Two concrete buildings on the pier were raised by typical house-moving methods, and new substructures were built under them. New crane rails were installed along each side of the new pier deck.

In the new structures for the pier and dry dock, including the Cyclopean walls, Connolly placed 65,000 cubic yards of concrete and 200,000 cubic yards of fill material. The fill was trucked in by a subcontractor, Asbury Transfer Co., Wilmington, Calif., placed in 6-inch layers, and thoroughly compacted with pneumatic rollers.

The many specialized items in the contract were handled by a number of subcontractors, including Kennedy Pipe & Supply Co., Paramount, on the mechanical items; Hoffman & Sons, Inc., Long Beach, on the electrical work; Sharp & Fellows Contracting Co., Los Angeles, on the railroad construction. Anthony T. Meehle, as well as Macco Corp., is placing reinforcing steel, and Emsco Concrete Cutting Co. has the work on the piling and concrete breaking.

Work on this first increment of the subsidence remedial program was started in April, 1957, and completion is scheduled for July, 1959. Additional contracts will be awarded for succeeding increments as funds become available and detailed plans are prepared.

Personnel

The remedial work is being supervised by the Navy's Bureau of Yards and Docks with Captain C. H. Neel as resident officer in charge of construction. Lieutenant (jg) D. K. Bleck is assistant resident officer in charge. Roy King is construction engineer. The work at Long Beach falls within the Eleventh Naval District with headquarters at San Diego. Capt. A. D. Hunter is officer in charge of construction for the district.

For the Connolly-Pacific Co. and T. E. Connolly, Inc., H. B. Larison is project manager and Norman Larison is general superintendent. Fred Prendergast is project engineer for the contractor, and Leonard Schiada is office manager. THE END

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Names in the news

H. E. Widdell, newly elected director of Raymond International Inc.

McKee & Co. president named director of Raymond

H. E. Widdell has been elected a director of Raymond International Inc., New York City construction firm and builder of pile foundations. Widdell is also president of Arthur G. McKee & Co., Cleveland, Ohio, builder of blast furnaces.

Widdell's election reflects a new McKee-Raymond working association for the design, engineering, and construction of new petroleum refineries and chemical plants for overseas customers.

Capt. Carberry heads military work in Spain

Capt. D. E. Carberry, CEC, USN, is now head of the American military construction program in Spain. He succeeds Capt. V. C. Bertelsen as officer in charge of construction for military bases being built in that country.

Capt. Carberry will be relieved at his former post as District Public Works officer and officer in charge of construction, Ninth Naval District, Great Lakes, Ill., by Capt. Joseph E. Rehler.

NCPM re-elects officers

G. A. Robinson has been re-elected president of the National Clay Pipe Manufacturers, Inc., an association of 48 member companies which produce vitrified clay pipe for underground sanitary systems, heating and ventilating ducts, and other applications.

Also re-elected were: A. J. Reed, vice president and director of research; D. M. Strickland, vice president and consultant to the board; W. D. Anderson, secretary; and R. G. Scott, treasurer.

Hayward named chairman of Corps' dredge board

Henry G. A. Hayward, a civilian employee of the U. S. Army Engineer Division, North Atlantic, has been named chairman of the Hopper Dredge Board. The board monitors, for the chief of engineers, the operation of a fleet of 17 seagoing hopper dredges. Hayward succeeds the retired Clarence C. Burger.

Hayward is also chief of the Marine Division with nationwide responsibilities for the chief of engineers.

The Corps has assigned Col. Andrew P. Rollins, Jr., to the Army War College, Carlisle Barracks, Pa. Col. Rollins was formely Director of the Waterways Experiment Station, Vicksburg, Miss. In that post he headed the Corps' principal research, development, and testing facility in the fields of hydraulics, soil mechanics, concrete research, and flexible-pavement design.

B-G ditcher sales chief heads new CIMA bureau

John L. Root has been elected chairman of the newly organized Continuous Trenching Equipment Bureau of the Construction Industry Manufacturers Association. Root, who is chief of ditcher sales for the Barber-Greene Co., Aurora, Ill., has a wide experience in the manufacturing and sales of continuous trenching equipment.

John L. Root, chairman of the Continuous Trenching Equipment Bureau of the Construction Industry Manufacturers Association.

The new bureau is the first industry product group to be formed by CIMA, which is organizing other such groups in order to expand the services to its member companies.

Contractor honored by Fordham University

Fred J. Driscoll, president of the George F. Driscoll Co., New York City general contractors, has received an honorary degree of Doctor of Laws from Fordham University, Bronx, N. Y. A former president of the Building Trades Employers' Association of New York City, Driscoll was honored for his ability and integrity as a builder; as an arbitrator in labor disputes; as a pioneer in establishing and supervising pension funds for workers in the building trades; and as a donor to charities.

Ohio Highways names

James A. Atkinson has been appointed field construction engineer for 23 Ohio counties by the Department of Highways. At his post he aids in administering highway construction activities in three highway divisions.

Firestones deliver lowest cost-per-hour service!

From the New York Thruway to Montana's Hungry Horse Dam, contractors using Firestone off-the-highway tires are making new records for long hours of tire service and slashing tire maintenance costs. One big reason is new Firestone Rubber-X—the longest wearing rubber ever used in construction equipment tires.

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"This machine has the balance, stability and spee to outdo all other loaders in this size range"

That's how G. C. Collins of Collins Bros. Contracting Co., Memphis, Tenn., refers to the 1¾-yd. Model 12 "PAYLOADER" tractor-shovel.

Collins has been using tractor-shovels of various kinds in his excavating and grading business through the years, so he and his foreman and machine operators are tractor-shovel "veterans". They know what each model can do and how easy they can do it.

Collins' Foreman, Billy M. Garrett, has this to say about the Model 12: "I like the foot control of the speed when approaching trucks that leaves both hands free for other controls and no clutch to work".

His operator, J. T. Parish, says, "In my 27 years as an operator, the Model 12 is the fastest machine I have ever worked and is very easy to control."

This refinery job, as an example, involved expanding and revamping the storage capacity. It was necessary to tear down existing dirt fire walls and throw up new ones . . . to dig foundations for new tanks . . . to load out several thousand yards of dirt. The Model 12 ate up all this work easier and faster than any tractor-shovel they ever owned, and it's the machine that all four of their operators prefer to run.

G. C. COLLINS

"Advance design of the Mo 12 "PAYLOADER" gives unequa operator comfort, handles m yardage at lower cost per yar

"Does three times as much work"

Carl Johnson of Robert A. Whitaker Co., Manteca, California, says, "Now we've got speed. Our other loader was just as big, but we're getting 3 times as much work done with the Model 12. Take this job I'm on now. It's dusty and tiresome, but the Model 12 power-shift transmission and power-steering make it easy. More comfortable position for the operator, easy controls, good vision and knowing you are knocking out the work faster makes the Model 12 the best of its kind."

"Outproduces two other larger shovels"

That's the word of Bud Clary of Clary & Son, Dayton, Ohio, who explains, "The Model 12's maneuverability, balance, speed, and ease of operation enables my operators to load out more yardage per hour than larger tractor-shovel units. On an airport job this summer, excavating 10″ of broken concrete and 2 feet of earth, it loaded out up to 500 yards per 8 hours—considerably more than the two other tractor-shovels on the same job."

"Cuts basement excavating time by three hours"

John Beniger, Sheboygan, Wis. contractor continues, "It's that kind of production that puts money in the bank for me. I can also load a 10-yd. truck from stockpile in 1 minute. Best of all, I'm not all worn out at the end of the day."

"The Model 12 weight is spread out over the entire track length instead of being concentrated on the front. This allows me to work on soft, spongy ground where others can't. Less weight on the front idlers also means less strain on the entire track."

"Operating the Model 12 is a cinch. Power steering requires only a light touch on the steering levers, and there are no back-breaking foot levers to pump in the process. Any speed change up or down is made instantly, on-the-go, with only finger-tip effort. Forward and reverse shifting is just as easy."

"It's the most ruggedly built tractor-shovel I ever owned. In 1,000 hours of heavy work, maintenance and downtime has been practically zero. As far as I'm concerned, the Model 12 makes all other tractor-shovels obsolete."

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Big drill matches big rock cut

by ANTHONY N. MAVROUDIS
field editor

Up to 21,000 cubic yards of roadway excavation is being moved in two 10-hour shifts, and this production has been made possible by two items: a large heavy earthmoving fleet and a new portable drilling rig.

C. F. Replogle Co., Circleville, Ohio, the contractor on a 6-mile section of the 310-mile Cincinnati-Conneaut Freeway, has to excavate over 2,900,000 cubic yards of rock and earth on this $4,200,000 contract. The job, located southeast of Mansfield, Ohio, has a spectacular rock cut requiring the removal of over 1,400,000 yards of rock. This material is being drilled by a new Robbins RR10 rotary drill.

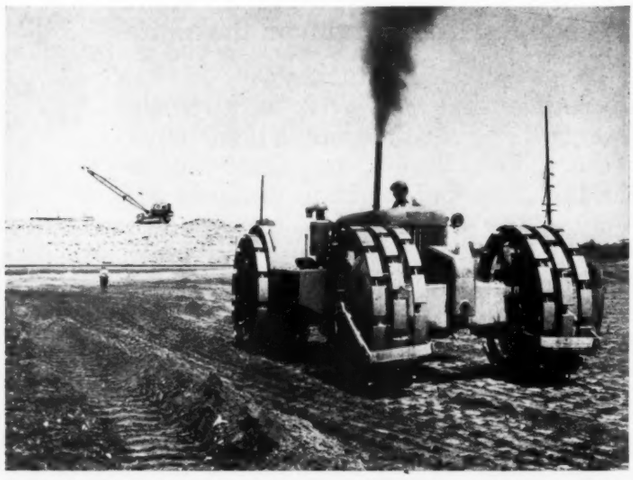
Sink blast holes fast

The drill, manufactured by the Robbins Machine & Manufacturing Co., Inc., Oneonta, Ala., is mounted at the rear of an International TD-24 tractor and employs a mechanical drive to rotate the drill bit. The power is supplied through the tractor's front and rear power takeoff. An Ingersoll-Rand 600-cfm Gyro-Flo air compressor, mounted on the front of the tractor at the front to supply air to remove cuttings. A Roto-Clone at side of the tractor eliminates the dust problem. The 25-foot mast, which can be lowered, has movable front leads to hold additional steel.

In a 110-foot-deep rock cut on the Cincinnati-Conneaut Freeway in Ohio, a Robbins RR10 rotary drill sinks 9-inch blast holes 20 feet deep in about two minutes. The drill is rear-mounted on an International TD-24, which has an Ingersoll-Rand Gyro-Flo 600-cfm compressor

(Additional photo on front cover)

The drill works on the last lift to be blasted out of the 1,400,000-yard cut. When completed, the cut will measure 110 feet deep, 210 feet wide across the bottom, and about 365 feet wide across the top.



Compaction of fills is done in a bridge approach area by a Buffalo-Springfield Kompactor. In the background is a Lima crane working on one of the eleven bridges in the 6-mile stretch.

tor, provides air to remove cuttings. The contractor is using 6 and 9-inch-diameter drill bits to sink blast holes 23 to 40 feet deep through the soft sandstone. Hughes Tri-Cone, plus Brunner & Lay drill bits are being used, and penetration rates in this material average 10 to 12 fpm.

The 25-foot drill mast is equipped with movable front leads which hold additional drill steel. This makes it easy to add another 20-foot length when deeper holes are required. Replogle is using 7-inch-diameter drill steel with the 9-inch bits and 4-inch-diameter steel to sink 6-inch holes. Three hydraulic jacks are used to level the drill mast—regardless of the tractor's position—and because the mast is hinged to the pedestal it can be lowered quickly by two hydraulic cylinders for short hauls on a project.

Because of its setup, the unit can exert up to 60,000 pounds of down pressure on the drill bit. This and the heavy-duty rotary drive, which provides variable speeds for drilling all types of soft material and hard rock, make possible penetration rates up to 12 fpm in soft material and 1½ to 2 fpm in hard blue sandstone. The drill rig is also equipped with a high-capacity Roto-Clone to eliminate the dust-control problem.

For any long-distance hauling, the drill mast and air compressor are removed from the tractor and loaded onto a low-bed trailer; the tractor is carried by a similar trailer.

Load blast holes

Replogle is loading the blast holes with large amounts of ammonium nitrate, supplied by the Austin Powder Co., Cleveland, Ohio, and a scraper fleet is handling the excavation. A two-bag concrete mixer is used to mix the ammonium nitrate with diesel fuel at a rate of 100 pounds per gallon.

The 9-inch-diameter holes, spaced on a 33×27-foot pattern, are loaded with about 250 pounds of the mixture. A stick of 40 per cent strength dynamite, with an electric blasting cap, is then loaded into each hole to set off the blast. The contractor averages about 3½ cubic yards of material for each pound of ammonium nitrate used.

This soft material disintegrates readily with this blasting method, and scrapers, faster than a truck-shovel fleet, are able to handle the excavation. Six M-R-S 250 tractors, equipped with Cummins 550-hp diesel engines, are being used to pull the four Wooldridge 41-yard scrapers and two Caterpillar 90 scrapers. These M-R-S prime movers were developed by the manufacturer at the suggestion and with the assistance of the contractor. Rounding out the scraper fleet are four LeTourneau-Westinghouse Model

(*Continued on next page*)

Much of the remainder of the 2,900,000 cubic yards of excavation is earth, and it is being picked up and hauled by a big scraper fleet. The Cat DW20, left, is returning empty to the cut. At right, a LeTourneau-Westinghouse Model B is being push-loaded by a D9.

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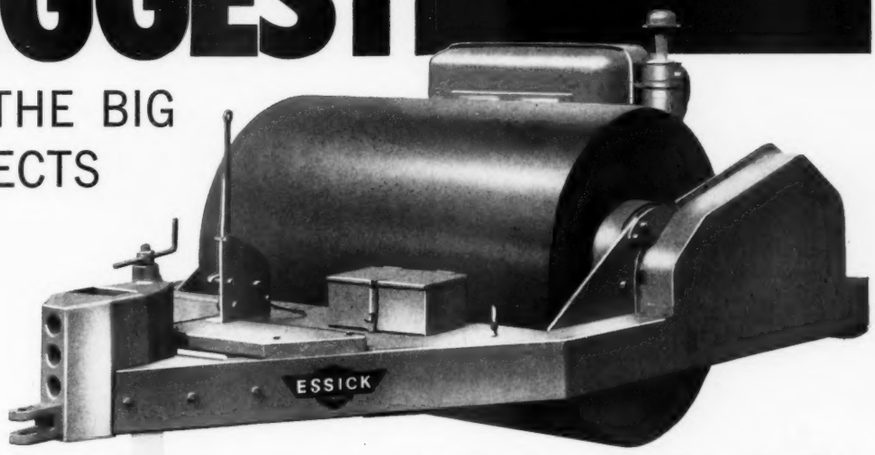

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With the tremendous compaction of 580 tons of kinetic energy developed each second, the Essick 72" vibrating compactor has proven it can cut more than 50% from spreading and rolling time required by any other methods now used for compacting earth fills.

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The Essick Model VR-72-T has successfully compacted lifts up to 7 feet of granular material and lifts from 2 to 5 feet of heavy soils having a clay content of more than 45%.

The VR-72-T produces maximum compaction through *high frequency vibrations* utilizing a scientifically engineered power transmission system. Where other equipment has failed, Essick vibrating rollers provide continuous production year after year.

The Model VR-72-T is designed for the contractor whose present equipment cannot achieve required densities...whose compaction costs are too high... whose equipment investment, operation, maintenance, haulage, and storage costs are excessive—anywhere in the compaction field where present equipment and methods are costing precious dollars, the Essick Model VR-72-T vibrating roller will do the job better at a greater profit.

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For more facts, use Request Card at page 18 and circle No. 231

(Continued from preceding page)

A giant of the scraper fleet excavating the cut is this Wooldridge 41-yarder. It is pulled by an M-R-S 250 tractor powered by a Cummins 550-hp diesel, while two Cat D9's help by push-loading. Blast holes were loaded heavily with a mixture of ammonium nitrate and diesel fuel to disintegrate the soft sandstone enough for scrapers to excavate.

B Fullpak units and three Cat DW20's. Four Cat D9 and four D8 tractor-dozers are pushing these rigs to capacity and also spreading the fill. All tractors and scrapers are equipped with Shunk cutting-edge steel for longer life on the tough grading assignment.

When operations started at the rock cut—which will measure 110 feet deep, 365 feet wide at the top, and 210 feet across the bottom—the contractor used a Lima 1601 shovel with a 5-yard bucket and seven LeTourneau-Westinghouse Tournarockers for the excavation. This was done because of the 5,000-foot hauling distance required between the cut and a few deep fill areas. As the cut progressed, the Lima and Tournarockers were shipped to another Replogle project near Jackson, Ohio. The long haul during work on the big cut resulted in relatively low daily production figures but, with the addition of three Cat DW21 scrapers to the present fleet, the contractor expects to get a maximum production of 35,000 cubic yards for two 10-hour shifts.

The deepest fill on the project is about 60 feet. Lifts are compacted by rubber-tire equipment running over them and by a Buffalo-Springfield Kompactor.

The entire project will have about 500,000 cubic yards of excavated material wasted in areas along the right-of-way. Of this amount, more than 325,000 yards of waste is coming out of the rock cut; the remainder comes from the southern four miles of the contract. Replogle has an average haul distance of 3,200 feet between the cuts and the various waste and fill

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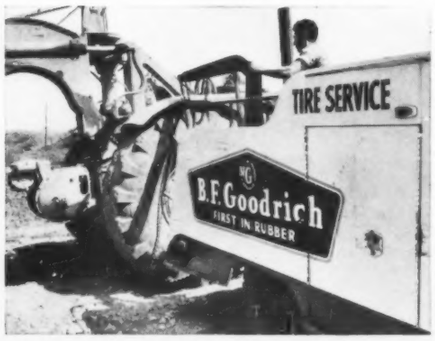

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areas located on this project.

Besides handling the huge grading job, the contractor is building eleven bridges to carry the Freeway over and under existing roads. The concrete and steel structures are supported on steel H-piles and tubular piles, driven by a Del Mag hammer. Replogle has two Lima cranes—a 54T truck crane and a 44 crawler to handle the bridge work. Another pair of Lima 34 crawlers are being used as draglines.

All the diesel fuel, gasoline, and lubricants used on the project are Gulf Oil products. Preventive maintenance is handled on the job by the contractor, and all major repairs and replacements are carried on at the company's headquarters in Circleville.

Even though Replogle has an October, 1959, completion date, he hopes to complete the paving of the two 24-foot concrete roadways this season. The contractor uses a company-built wet batch plant, equipped with a Burmeister 7½-cubic-yard mixer, to charge the fleet of Koehring 6 and 8-yard Dumptors hauling to the paving crews. The paving train is conventional, and joints are being sawed in the 10-inch reinforced-concrete slab.

John Bizzack is the general superintendent, and Lawrence Bizzack the project superintendent for Replogle. Both keep in touch with the entire job by means of five Motorola mobile radios and the Motorola base station in the field office. The radio frequency used is the same as that for the Circleville headquarters so that there is efficient coordination between the two offices. Resident engineer is Chuck Haynen and Chet Wirrick is assistant engineer.

THE END

A LeTourneau-Westinghouse Fullpak Model B scraper, push-loaded by a D9, starts to pick up another load in one of the earth cuts. Some 1,500,000 yards of excavation—about half the total—was outside the rock cut.

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This aerial view of the Sixth Street Expressway in Kansas City, Mo., shows some of the 14 bridges required in a one-mile section. The A-S-B interchange, which included the box-girder bridge, is in the background.

Concrete placing handled three ways on

Three different methods of placing concrete made deck work fast and efficient on a box-girder bridge crossing the Sixth Street Expressway in Kansas City, Mo.

Three cranes bucketed the ready-mix concrete to the forms for the bottom slab. In placing concrete for the girders, muscle power, rather than cranes, provided the answer, and the contractor, Swenson Construction Co., Kansas City, Mo., kept a crew hustling wheelbarrows from a central collection hopper. Concrete for the top slab, however, was placed most effectively by cars on a monorail system.

Each method was particularly suited to the different work conditions for three stages of the box-girder construction.

Part of big project

This bridge is one of 14 required to get traffic on, off, and over a one-mile segment of the Sixth Street Expressway in downtown Kansas City. When this mile was opened to traffic, it marked the completion of nearly four years of construction costing some $6.2 million. In addition to this, the price of the right-of-way came to about $5.8 million.

The Locust Street Bridge, the largest of six structures on the A-S-B interchange at the east end of the expressway, carries north and southbound traffic over the expressway. Swenson Construction Co. built this bridge, plus the four other box-girder bridges and the "T" girder bridge. Working jointly with Swenson was Union Construction Co., Kansas City, Kans., which handled concrete paving and dirt work for the entire expressway. The contract price for the joint venture came to $4.4 million.

The 4-span Locust Street Bridge contains two 100-foot spans flanked on either side by spans of 95 feet. The reinforced-concrete box girders carry two 26-foot roadways separated by a 4-foot raised median. On each side of the bridge are 2.5-foot walkways and curbs carrying aluminum guardrails.

The box girders are supported by concrete piers containing two circular columns. The columns rest on block footings founded on H-beam piling.

Essentially, the box-girder superstructure consists of an upper and a lower slab connected by concrete girders which run the length of the bridge. The upper slab becomes the deck of the bridge. The girders and lower slab tie in with the deck and serve primarily as supporting members.

The upper slab of the bridge is 7 inches thick; the lower slab is 6½ inches. The girders, approximately four feet deep, vary in width from 14 inches at the ends of the spans to a cent

S box slab

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MODEL 104: 1¼ cu. yd. cap. — 4 wheel drive with Torqmatic transmission. Choice of gas or diesel power. For construction, sand and quarry work.

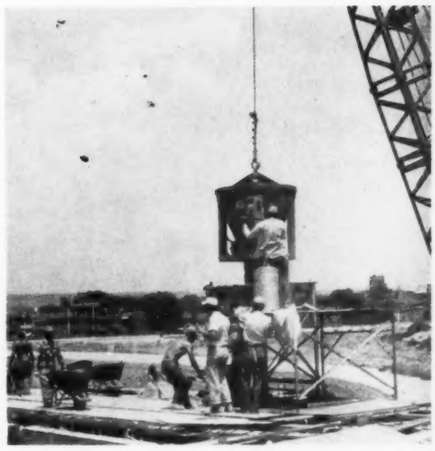
way: on box-girder bridge

to a minimum of 7 inches near the center.

Three methods of pouring

Swenson Construction Co. built the box girders in three stages: the lower slab first; the girders and webbing second; and the upper deck last. For each stage, a different method was used for placing the concrete.

The lower slab was poured by three cranes, which swung the buckets of concrete from transit-mix trucks to the forms. A Koehring 405 and a Manitowoc Speedcrane worked from the ground on either side of the bridge; a ¾-yard truck crane worked from one of the abutments.



Crews with wheelbarrows place concrete for the girders after the bottom deck has been poured by the crane-and-bucket method. The Manitowoc Speedcrane swings a Gar-Bro 1-yard bucket from transit mixers to the Gar-Bro bin. A third method was used for pours on the top deck.

The crane-and-bucket method proved best for the lower slab, because the deck was obstructed by a forest of reinforcing steel that stood up along the girder lines. The steel prohibited the efficient use of any type of wheel equipment to carry the concrete.

Manpower was most important when it came to placing concrete for the long narrow girders. A crew of about twelve men hustled wheelbarrows from a Gar-Bro collection hopper to the forms. The men worked on plywood walkways that were supported by short sections of tubular scaffolding. One crane was needed to feed the collection hopper.

This method was particularly suitable to pouring the girders, because the volume of concrete was small and the men could move around faster than the cranes for this phase of the job.

Concrete for the deck slab was placed with still another method. Concrete was chuted from transit-mix trucks at the abutments to cars riding on monorails. Each Rex Railporter engine carried its car out over

(Continued on page 47)

The lower deck and girders have been poured, and a carpenter is setting formwork for the 7-inch upper deck. This has 4×4 posts supporting the 2×6 joists that carry the plywood forms. Plywood is nailed in narrow strips so that it can be removed through access holes in the lower deck.

FIVE...

Construction Task Force

Today, everyone works against time—watches cost with an eagle eye! . . . Try putting a stopwatch on every step in your present handling of bulk materials. You'll probably agree that performance could be improved . . . Then, prove to yourself what could be done with modern, efficient equipment — call your Trojan* distributor . . . He'll show you Trojan's rugged construction and famous, exclusive operating benefits (reverse curve safety arms, straight-line horizontal thrust, independent bucket action and low load carrying position) . . . Then, he will gladly arrange a demonstration on your own job with whichever of the 5 Trojan models that best suits your particular problem . . . Check your stopwatch again and note the difference!

*Reg. U. S. Pat. Off.

MODEL T-18: 18 cu. ft. cap. — 2 wheel drive with torque converter. For light to medium bulk materials handling work in close quarters.

MODEL LHM-75: 1 cu. yd. cap. — 2-wheel drive with torque converter. Gas or diesel power. For indoor and outdoor bulk materials handling.

TROJAN* *REG. U. S. PAT. OFF.

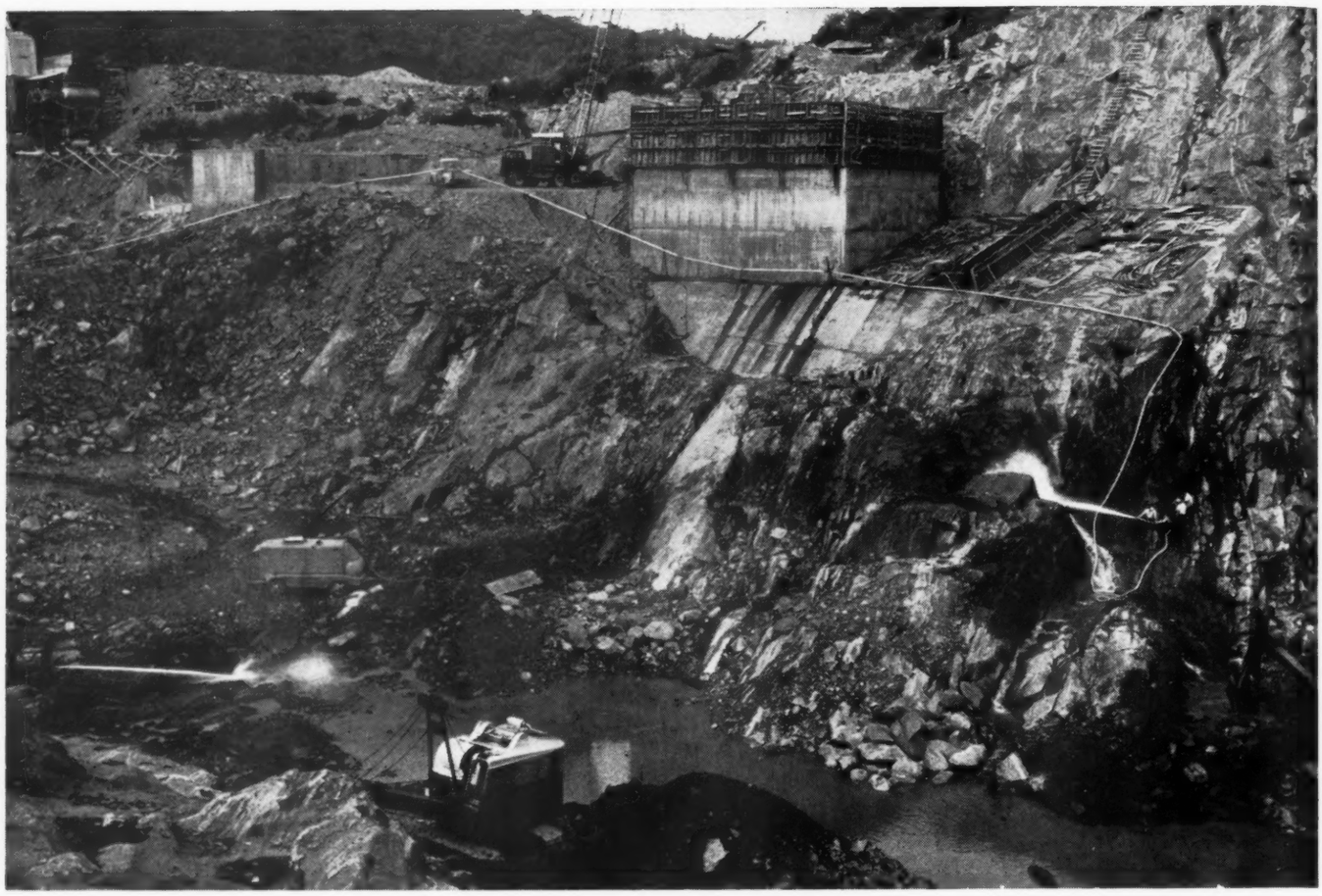
YALE & TOWNE

TRACTOR SHOVELS

2 & 4 Wheel Drive Front End Loaders

CONTRACTORS MACHINERY DIV. THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA

Fore more facts, use Request Card at page 18 and circle No. 233



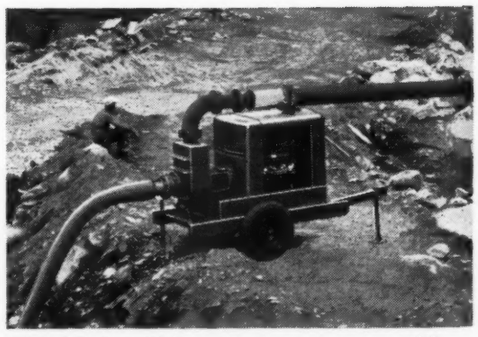
Work Speeded on Earth Dam with *MARLOW JETTING PUMPS*

4½ million dollar project scheduled for completion soon!

A unique application for Marlow jetting pumps was on a 4½ million dollar earth dam at Riverton, Conn. The dam, located on the Farmington River about 10 miles north of Winsted, is part of the flood control soon to be completed in the area.

To save time and money, the contractor used high pressure streams of water to work fines into the rock fill on the face of the dam. Two Marlow 6E6 pumps, powered by Chrysler V8 engines, were used to supply water at 75 p.s.i. at the nozzles. These dependable Marlows pump 1,000 g.p.m. at constant nozzle pressure even when work was done at the top of the dam, 90 feet above the level of the river. As many as three of these 2-inch nozzles were used with the two pumps. Water drained down to a low point on the project where a third Marlow was used for dewatering.

Marlow builds a complete line of AGC rated pumps and dependable Mud Hogs for handling muddy or trash-laden water. Write today for Bulletin CO-4 describing these pumps and the name of your Marlow Dealer.



This Marlow high-pressure pump powered by a Chrysler V8 Engine supplied water at a pump pressure of 130 p.s.i.

A two-inch nozzle mounted on a half-track saved time in moving the jetting stream from one location to another.

Marlow PUMPS®

DIVISION OF

BELL & GOSSETT CO.

Midland Park, New Jersey

Longview, Texas • Morton Grove, Illinois

7-293

For more facts, use Request Card at page 18 and circle No. 234

Reinforcing is set for the upper deck as girder pours are being made in the background. A double mat of reinforcing steel ties in with dowel steel extending from the girders.

Compaction of backfill next to the bridge abutment is handled by an Allis-Chalmers HD-5 equipped with an Ottawa tamper and a front-end loader.

(Continued from page 45)

the forms to the point of placement. Three separate monorails, each with its own engine and car, were used in the operation.

In this case, the volume of concrete justified the use of the monorails. Unlike the lower slab, the deck contained no forest of reinforcing steel to obstruct the cars; the steel in the deck slab lay flat.

Forming

Wooden forms faced with plywood panels were used in all three stages of the box-girder construction. The girder forms, made up in 8-foot sections, required snap ties of varying widths because of the tapered girders. Widths ranged from about 14 inches at the ends of the spans to a minimum of 7 inches near the center.

Forms for the deck were tricky to build because they had to fit between the tapering girders. Since the forms were boxed in between the upper and the lower slabs, they had to be stripped and lowered through 2.5-foot-square access holes in the lower slab. In order to fit through the hole, the plywood sheathing had to be in narrow strips.

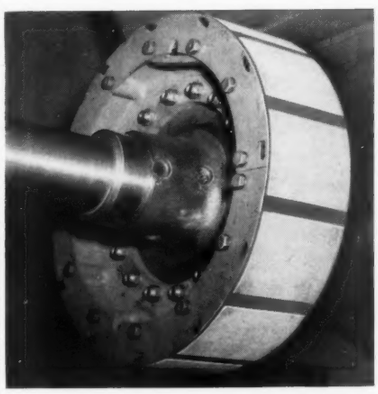
During the work, the box girders were supported by an elaborate system of falsework. Supporting the system from the ground were cottonwood piles, driven about twelve feet deep to a 20-ton bearing. Rows of 12 × 14-inch timbers, resting on top of the piles, supported Acrow adjustable steel shores. The shores, on 2-foot centers, held 4 × 12 joists which received the plywood decking.

Built also as part of the interchange were four graceful curving ramps that carried one-way traffic over the freeway. These structures have the box girders supported by only one central column.

Personnel

Superintending the job for Swenson Construction Co. were Eric Swanstrom and F. G. Montfort. Superintendents for Union Construction Co. were W. F. Miller, Frank P. Taylor, and W. W. Robinson. The resident engineer for the Missouri State Highway Department was H. S. Jordan. THE END

New B.F. Goodrich Hi-Torque Brakes help C.F. Replogle Co. cut cycle time



Full circle stopping power of B.F. Goodrich Hi-Torque Brake allows safe hauling in higher gear – because it stops heavy equipment twice as fast as conventional shoe brakes.

CIRCLEVILLE, OHIO – After months of actual operating experience with the new B.F.Goodrich Hi-Torque Brake, C. F. Replogle Company reports "a definite cycle time reduction". Replogle, prominent contracting firm in Ohio and surrounding states, attributes this reduction entirely to the new brake "which allows safe hauling in higher gear".

With the new brakes installed for comparison tests on tractor-scraper combinations and heavy dump trucks, Replogle discovered many other advantages over conventional two-shoe brakes. For instance, maintenance down-time is reduced considerably, since the brakes are self-adjusting throughout the life of the lining. Job capabilities are expanded because the brakes give smoother, faster stops with less chance of fade—enable Replogle to run on terrain operators considered unsafe using conventional brakes.

See how the *full circle* stopping power of B.F.Goodrich Hi-Torque Brakes can mean safer, more economical, more profitable operation of your own off-road equipment. Whether your field is construction, mining or logging, send for free booklet—The B.F.Goodrich Hi-Torque Brake. Gives operating features, specifications and test results. Write B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Troy, Ohio.

B.F.Goodrich Hi-Torque brakes

For more facts, use Request Card at page 18 and circle No. 235

We put a company plane on the payroll at a cost of $5,207 per year

by W. McKEAN WHITE, JR.,
vice president, White Mfg. Co.
Elkhart, Ind.

Many of the smaller contracting firms are debating whether or not it pays to own and operate a company airplane. From our experience with a Cessna Model 182, we believe that a plane is an invaluable asset to business. We selected the four-place Cessna as being fast enough for cross-country flying, yet relatively stable and easy to handle.

The plane came fully equipped, including an automatic rudder control and a complete instrument flight panel, though we didn't plan to use it for instrument flying. It had two navigational radios, each with separate transmitters, so that a radio was always available in case one failed.

We purchased an auto-pilot primarily for safety, in case we had to make turns out of bad weather, but it also proved a great help on long flights, relieving pilot fatigue and making navigation easier. The plane was used exclusively for business during the first year, and logged 272 hours for a total of 37,400 miles. Some 35 different trips were made, some for only a day, others for as much as four or five days. Travel averaged 1,070 miles per trip, or 7¾ hours flying time per trip.

Planning trips

The flying was done by one corporate executive, myself. In our opinion it was much too costly and inconvenient to employ a full-time pilot. However, we are now training several key men to fly.

The airplane was usually flown at an air speed between 150 and 160 mph, but because of wind conditions, time spent circling airports, and the weather, the ground speed averaged 138 mph.

In planning a trip, we usually figured an average of 140 mph. One trip to New York was made nonstop at a ground speed of 176 mph with favorable tail winds. Another trip was made from Montgomery, Ala., to Tampa, Fla., at an average ground speed of 190 mph. A flight from Elkhart to Boston was made in five hours, including a short landing at Elmira for gas, and the average ground speed on this trip was 169 mph. On the other hand, because of terrific head winds, a trip to Kansas City was made at a ground speed of 113 mph.

The usual cruising altitude was 7,500 feet, although if cloud height permitted, we preferred to fly at 10,000 feet where the air was smooth, there was less traffic, and the margin of safety was greater in event of engine failure.

The 35 trips made during the year covered 90 days and 55 nights, and the average trip was made in an average of about 2½ days. Many trips were made in a single day — trips to Chillicothe, Mo.; Cedar Rapids, Iowa; Sault Ste. Marie, Ontario; Paducah, Ky.; Milwaukee, Wis.; and Huntington, W. Va. These trips could not have been made in any other way in a single day with time allowed for business.

Gas, weather

At a high cruising speed, gas consumption was fairly high, and four hours was about as long as we could go safely without refueling, although the airplane has a range of four hours and thirty minutes. Slower flying would have increased the range, but

Contractor says, "Armco Liner Plates were an ideal solution..."

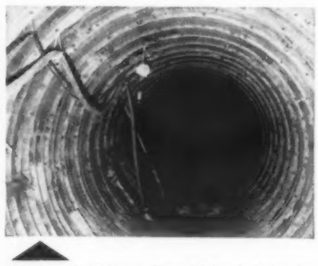
Alfred A. Bostow, president of A. B. C. Construction Company of California, recently said, "In some particularly hazardous areas, the use of Armco Liner Plates in tunnels was an ideal solution to our excavation problems."

He was referring to a project of the Metropolitan Water District of Southern California, involving both the A. B. C. Construction Company of California and W. C. Baker Company, a joint venture. Both firms are located at Norwalk, California.

Basic project was the construction of an extensive 48-inch-diameter water line. Because of existing utility lines, tunnels were specified as conduits under numerous street crossings as well as the bed of a stream. The contractor was considering whether or not to continue the water line installation by open cut immediately at the end of the specified tunnels. Also to be considered was the fact that the tunnels would be as much as 43 feet below the surface of the street.

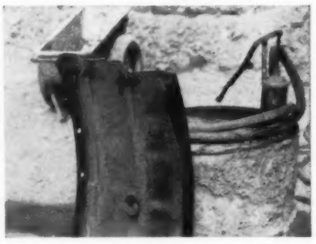
Continuing installation by open cutting would require engagement of a clamshell because the backhoe used in previous trenching operations had a maximum reach of 25 feet. Then too, solid sheeting would be required in the deep cuts because of unstable soil.

Considering cost factors, the contractor decided to extend the specified tunnels at each end on an uphill grade of about 20 per cent until the added tunnels were within 25 feet of the surface. Then the backhoe, being able to reach this depth, would resume open-trenching operations. However, whenever unstable soils were encountered at the 25-foot depth, the tunnel was continued until stable soils were reached.



This tunnel of Armco Liner Plates is being installed deep under Sepulveda Boulevard in Los Angeles to provide a conduit for an intersecting water line.

Close-up of Armco Liner Plate, showing bolts held in place with spring clips to facilitate bolting from inside the structure. Grout plug is welded in.



These tunnels were built with 12-gage Armco Liner Plates to form a structure 72 inches in diameter. Each curved and corrugated plate has an offset-lapped joint for extra strength. The plates, 18 inches wide, bolt together from the inside of the tunnel to form a complete ring.

* * *

Armco Liner Plate is one of more than 30 Armco products for drainage and engineering construction. All are quickly available through competent Armco Sales Engineers who can expedite shipment from one of the 56 Armco fabricating plants. Write us for specific information. Armco Drainage & Metal Products, Inc., 5718 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

After diverting stream flow from this creek bed, a 43-foot-deep shaft was driven through the paved bottom of the creek. Through this shaft, a tunnel of Armco Liner Plates was installed.

ARMCO

For more facts, use Request Card at page 18 and circle No. 236

we figured that the airplane's primary function is to save time, not gas. Actually, we found it undesirable to fly more than three hours without stopping to refuel and rest.

Generally speaking, weather did not cancel any planned flights. However, we took no chances on marginal weather, and when it was bad we either set down or did not take off.

Less than 5 per cent of our flights were changed by weather. The plane was weathered-in at different cities only three or four times, and good use was made of this time. In one case, an order was secured at Charlotte, N. C., which would have been missed had we taken off sooner. Only once was it necessary to leave the plane and return to headquarters by other means.

Operating costs

There are several ways to examine the cost of owning and operating a plane: actual cost or cash outlay, excluding the initial cost of the airplane; true cost, including depreciation; cost based on passenger mileage; or cost based on a comparison of other means of transportation and of time saved.

The total operating cost of the plane for one year was $1,650. This included such items as gas, oil, tiedown fees, engine maintenance, and landing fees, and the costs averaged out to $47 per trip. Fixed costs, exclusive of depreciation, totaled $1,467. These covered insurance, hangar rental, and some lesser items. Exclusive of depreciation, the total cash spent on the plane, for both fixed and operating expenses, was $3,117. This amounted to $11.45 per hour.

Insurance

Our insurance cost approximately $1,100 and gave complete coverage of the plane, with all risks, either ground or flight, limited to a total of $300,000. Medical payments were $2,000 per person. An admitted liability protection of $25,000 was carried on the pilot and each passenger, for a total of $100,000. There was no deductible provision for collision damage on the ground or in the air.

We carried the $25,000 admitted liability because frequently a person's life insurance was invalid if he flew anything but a commercially scheduled airliner. Anyone in our plane automatically gets a $25,000 accidental-death policy.

In the table shown on page 50, showing the cost of operating the plane for a year, we have conservatively figured a 30 per cent tax saving. Most corporations would figure in a 52 per cent tax bracket, and all costs would be reduced accordingly. Notice also that we figured on financing the plane by borrowing on our regular line of credit, so we have added interest charges as a cost item.

Renting vs. owning

An analysis shows that if we had leased the plane, the cost would be nearly one-third higher, about $7000. A Cessna 182 rents for $25 per hour, but the disadvantage here is that the airplane cannot be secured when it is needed, nor can it be kept away from Elkhart for an extended period of time without a minimum flight time guarantee.

The total passenger mileage came to 58,832 miles or a cost of approximately 8.9 cents per mile. This, rather than airplane mileage alone, shows the true cost of operations, for most of the passengers we carried would have had to buy extra train or plane tickets had we traveled by other means. On this basis, the corporation actually saved money, for you have to take into account the fact that trips were made in less time and, consequently, expenses for hotel rooms and

Push-loading for Jack Kleck Agricultural Tillage Service, Inc., Phoenix, Arizona, Tournatractor can load 12-yd. scraper every 77 seconds, including time for positioning, pushing, boosting out-of-cut, and return. Niel Kleck reports, "Tournatractor pushes out more loads for us!"

RUBBER-TIRED PUSHER
averages 35 sec. for 12-yard push-loads

In arid Arizona, where a little water has to go a long way, a common method of water conservation is agricultural land-leveling. Cutting highs, filling lows on farms, keeps scarce rain and irrigation water flowing evenly, avoids wasteful pools.

Among the firms engaged in this work is the Jack Kleck Agricultural Tillage Service, Inc., Phoenix. With a fleet of tractor-drawn scrapers and two LeTourneau-Westinghouse Tournatractors® for high-speed push-loading, the company has leveled hundreds of farms.

Time studies on one recent job — moving 123,000 cu. yds. of sandy loam to level two adjoining fields totalling 220 acres — indicate why the firm is enthusiastic about rubber-tired Tournatractor as a pusher.

Cuts time loading . . . speeds entire cycle

Tournatractor's average times on all parts of the load cycle were fast. Positioning for the push took just 13 seconds. Push-loading for big heaped 12-yard payloads averaged only 35 seconds. The big 210 hp pusher used an average of an extra 5½ seconds to give the tractor and scraper a high-speed boost out of the cut . . . then, in high reverse, roared back in 23½ seconds to its position for the next load.

Even with the boost to get the scraper team into high-speed haul fast, time studies showed Tournatractor could maintain loading schedules on a 77 second cycle.

Niel Kleck says, "Tournatractor is more maneuverable and gets around faster. It just pushes out more loads."

Superintendent Abe Galaviz agrees. He says: "You move around fast with Tournatractor. I wouldn't trade it for 2 crawlers on this work."

Likes "go-anywhere" ability

Big volume pushing ability is only one of the reasons Tournatractor is popular with the firm. Kleck also says that "there's no comparison between tire and track maintenance costs." He reports that when jobs are 30 miles apart or less, Tournatractor is sent to the job under its own power, and on his type of land-leveling work this is a most important saving in costly time.

Quick maneuvering, fast traveling, go-anywhere Tournatractor belongs in *your* equipment spread. Competitive in price with other tractors in its power class, it can get places faster, do more jobs for you faster. Contact your LeTourneau-Westinghouse Distributor for full details and a working demonstration.

Tournatractor's fast, easy maneuverability pleases operator Joe Foreman, who says: "I've operated all sizes of crawlers, and I like Tournatractor better than any of them. It's more maneuverable, and gets around better than the handiest crawler."

CT-1522-DCJ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use Request Card at page 18 and circle No. 237

COST OF CORPORATE AIRPLANE: ONE YEAR'S OPERATION

Initial purchase price:		$16,000
Cost of borrowed money, 5 per cent interest	$ 800	
50 per cent depreciation	8,000	
Income tax on depreciated value, 30 per cent	2,400	
Add interest cost:		800
		$16,800
Deduct tax saving:		2,400
Gross cost of airplane.		$14,400
At the end of one year, the plane with 272 hours could be sold for about $12,500. A $4,500 profit over depreciated value, subject to 25 per cent capital gain tax.		
Add capital gain tax:		1,125
		$15,525
Deduct sales value of plane:		12,500
		$ 3,025
Other fixed costs: total is $1,467. Net cost, with a 30 per cent tax saving is:		1,027
Total fixed cost of airplane:		$ 4,052
Operating costs: total of $1,650, or $6.07 per hour. With a 30 per cent tax saving, net cost is:		$ 1,155
Total cost of airplane for one year		$ 5,207

(*Continued from preceding page*)

meals were correspondingly lower.

The most important reason for operating a company plane is to save time for business. And that we did. An average of 435 miles per day was covered on the 35 trips, yet each of these was a business day on which sales meetings were held and calls made. Twice the time would have been required to do the same amount of business if we had used any other means of transportation.

Air-line services from Elkhart to Paducah or Milwaukee, for instance, are such that it would be impossible for an executive to go out and back in a single day, with time in the city for business.

Some extremely long trips were made in a single day's time with our plane. Once, I demonstrated a machine in Dothan, Ala., in the morning; lunched in Birmingham; called on a prospective customer in Shelbyville, Tenn., in the afternoon; and, having finished all business by 4:30 p.m., flew to Elkhart, arriving around 8 p.m.

It is difficult to estimate the importance of executive time saved. On one trouble-shooting job, I flew our chief engineer and our superintendent to Atlanta, Ga. With three key men away from the factory at the same time, it was important that we finish our business as soon as possible to get back to the factory. In this instance, it is hard to measure the value of the plane.

The plane not only saved time, it permitted us a flexible schedule. With the Cessna available, we were able to leave a job when it was done, instead of when a schedule said we must. Frequently, a sales contract would be finished early, and I could take off for home.

Business profits

In the first year of operating a plane, we called on 36 different dealers a total of 52 times. Probably we would not have called on one-third this number without the airplane, because we could not have taken the time from work in Elkhart. Twelve different customers were called upon, and 12 prospective customers were met. Sometimes the prestige angle was interesting, since both dealers and customers enjoyed being met by the company airplane and sometimes asked for a short ride. Occasionally, customers and dealers were flown to a particular job or to the factory.

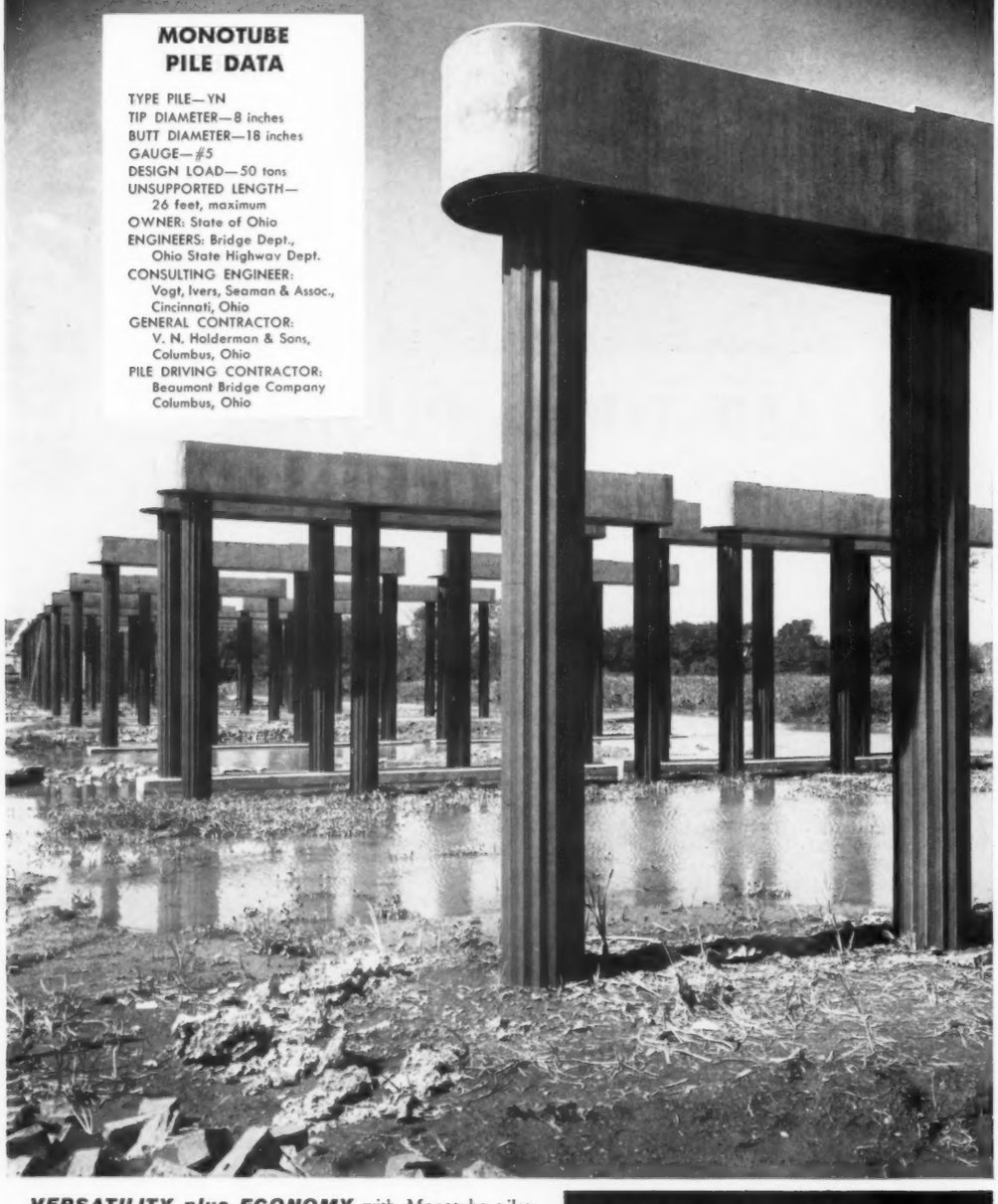
The airplane enabled me to do twice as much work as would have been possible without it. Because the airplane enabled us to make business calls which we otherwise would not or could not have made, we consider it a worthwhile investment.

The cost was a little more than for other means of transportation, but had we flown more, the cost per mile would have been less. And after our first year's experience, we do plan to fly more, making ownership of the plane one of our most economical operations. THE END

Hints on fuel selection for diesel engines

A 12-page illustrated brochure, "There Is a Difference in Diesels", released by the Detroit Diesel Engine Division of General Motors Corp., has information to assist owners and operators in choosing the correct type of fuel for their diesel engines. It covers 2 and 4-cycle engines, fuel systems, parts interchangeability, and service.

Copies of the brochure may be obtained by writing to the Division at Detroit 28, Mich.



VERSATILITY plus ECONOMY with Monotube piles. When soil conditions at this site in Mansfield, Ohio, prohibited conventional construction in crossing low-lying land, this adaptation of a foundation supported on Monotube steel piles proved to be an economical solution.

Tapered, fluted Monotube piles are available in lengths, diameters and gauges to meet every requirement. Write The Union Metal Manufacturing Co., Canton 5, Ohio, for complete information.

UNION METAL

Monotube Foundation Piles

For more facts, use Request Card at page 18 and circle No. 238

ARBA issues 1958 edition of highway directory

The new 1958 directory of "Highway Officials and Engineers" has been issued by the American Road Builders' Association. More than 1,700 names, titles, and addresses of administrative engineers and officials in highway departments of the 48 states, the District of Columbia, Hawaii, and Puerto Rico are contained in this edition.

Also listed in the directory are the administrative personnel of the Bureau of Public Roads, including the heads of its regional offices and the division offices in each state; engineers and administrative personnel of toll-road authorities; officers and directors of ARBA, its eight divisions, and its headquarters staff; and a tabulation of states having legislative authority to construct toll roads.

Available at $1 per copy, the directory may be purchased from the ARBA, World Center Bldg., Washington 6, D. C.

Aggregates in concrete topic of HRB report

"Chemical Reactions of Aggregates in Concrete", Highway Research Board Special Report 31, covers the identification of deleteriously reactive aggregates and recommended practices for their use in concrete. The report provides information on the locations where the reaction has occurred, and laboratory techniques that have been developed to identify potentially reactive aggregates.

Emphasis is placed on what has been done, and on the findings that will most likely be useful to engineers faced with problems of identifying potentially dangerous aggregates or with the necessity for using such aggregates in structures. A list of references concludes the report.

The 60-cent report may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Lease-purchase plan offered by Bruning

A simple lease-purchase plan, providing for application of lease payments toward the purchase price of engineering, drafting, and reproduction equipment is offered by the Charles Bruning Co., Inc. The plan makes it possible for firms with limited expenditures to install Bruning diazotype Copyflex and Verifax equipment, which are shipped without carrying charges.

The plan is available from the firm at 1800 West Central Road, Mount Prospect, Ill., or from any of Bruning's 48 branches and distributors in the United States and Canada.

Dravo Corp. News

H. E. Lore is the new manager of the Engineering and Construction Department of the Machinery Division of Dravo Corp., Pittsburgh, Pa. The department specializes in such construction as power plants, pump houses, and water and gas pipelines.

Goodyear appoints six

The Goodyear Tire & Rubber Co.'s Industrial Products division, Akron, Ohio, has established six new positions in its development organization. Named as chief engineers are A. R. Hacker, conveyor-belt development; F. O. Leonard, coordination of development activities for special industrial products; A. B. Hirtreiter, development work on automotive suspensions; R. H. Miller, rubber flooring and automotive mats; and E. C. Montgomery, development operations for tank lining and industrial rolls.

C. E. Taylor, presently serving in the same capacity as the five chief engineers in Akron, will move to the division's hose plant at North Chicago, Ill., as chief chemist, when research facilities are completed there.

ESCO elects two

R. W. deWeese and Henry T. Swigert have been elected to the Board of Directors of Electric Steel Foundry Co., Portland, Ore., producer of high-alloy ferrous metals.

Black & Decker appoints two new managers

Black & Decker Mfg. Co., Towson, Md., has appointed Glenn C. Wilhide, Jr., general manager of its subsidiary, Black & Decker Mfg. Co., Ltd., Brockville, Ontario, Canada. Wilhide is responsible for complete operations of the Canadian electric tool firm. He succeeds Drummond R. Stuart.

At the same time Alexis N. Dahl was named to fill Wilhide's former post as purchasing manager of the parent company.

Accept this

L-W

CHALLENGE

. . . to UP your

PROFIT MARGIN

Yes . . . prove to me that L-W POWER-*Flow* Adams Model 660 does more blade work at less cost, than any other grader. Phone me on or about ..... (date) at ..... (number) to arrange for a demonstration on one of our jobs.

Name ..... Position .....

Company .....

Address .....

City ..... State .....

(Fill out and mail to your LeTourneau-Westinghouse Distributor)

Let us prove to you that

L-W POWER-*Flow*® 660 does more blade work . . . faster . . . at less cost

than any other grader

In extensive field tests . . . and through the experience of owners all over the world . . . we know that L-W POWER-*Flow* Adams† Model 660 grader will do more blade work, faster, and at less cost than *any* other grader, of *any* size, *any* price. We believe this grader will do the same for you.

This 190 hp grader, with torque-converter drive and constant-mesh transmission, provides instant power to match any load. It has infinite gear ratios, with forward speeds to 27.4 mph and reverse speeds to 24.4 mph. Its balanced construction distributes weight for maximum traction and stability. It has the built-in Go-power to do more work, in less time, at lowest cost.

In your effort to UP your profit margin, you will save money by replacing your older, less efficient graders with modern, high-speed POWER-*Flow* 660. It will cost you nothing to see this grader *in action* on one of your jobs. Fill out and mail the above "request for demonstration" to your LeTourneau-Westinghouse Distributor.

†Trademark G-1931-DC-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

For more facts, use coupon, or Request Card at page 18 and circle No. 239

A key unit for hardsurfacing worn rock-crusher rolls is the wire feed reel and meter kit of the Lincoln Electric ML-2 "squirt" welder. This is mounted on a low scaffold alongside the crusher, so that the cable will reach the operating position over the roll surfaces.

Rolls stay in rock crusher during hardsurfacing process

A threaded-shaft fixture rests on crusher frame, supports the welding gun as it applies alloy fluxes at speed of 26 to 30 inches of bead per minute

A relatively new submerged-arc process for hardsurfacing the worn rolls of rock crushers features a big time and money-saving advantage: the rolls do not have to be removed from the crusher.

The Lincoln County Highway Department of Merrill, Wis., is finding the process efficient in maintaining crusher units. An abrasion and impact-resistant deposit is applied at a speed of 26 to 30 inches of bead per minute by a submerged-arc-welding gun, which introduces alloys to the mild steel electrode metal from the flux.

The first step in the job is removing the hopper above the rolls so that the welding fixture can be mounted. Bolts, which hold wedges supporting the individual roll shells to the centers, are loosened and the rolls preheated to a minimum of 200 degrees F.

A compact wire feed reel and meter kit of a Lincoln Electric ML-2 "squirt" welder is mounted on a low scaffold alongside the crusher, so that the cable will reach over the roll surfaces. The alloy flux is fed from a cone hopper on a semiautomatic submerged-arc-welding gun.

Hardsurfacing operations

A portable drive unit with a ½-hp ac motor is end-belted to a small hydraulic transmission which, in turn, is belted to an intermediate sheave and then to the main drive sheave of the crusher rolls. This arrangement provides graduated speed control. It is possible to substitute a ½-hp dc motor, which would permit the drive to be operated from the oversize exciter of the welding generator.

The welding gun travels on, and is supported by, a threaded shaft that provides a stepover of ¼ to 5/16 inch per revolution of the roll. The ends of this specially built fixture rest on angles, which are part of the crusher frame and support the rock feed hopper.

The gun-support mechanism on the fixture contains a half-nut riding the threaded shaft, which permits tilting the gun back to break the arc. The mounting is adjustable through U-clamps and slotted holes in the vertical bracket. A small coiled spring on the saddle allows the bracket to be deflected by hand, so that the arc can be struck and the gun raised just

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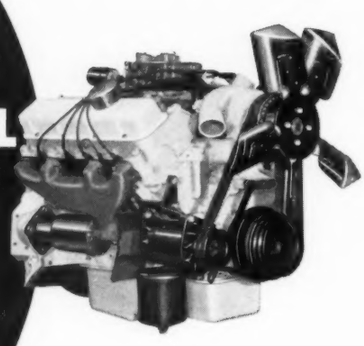

Whether you farm . . . drill for oil . . . build highways . . . or manufacture, there's a Ford Industrial Engine that can make your operation even more efficient and more profitable.

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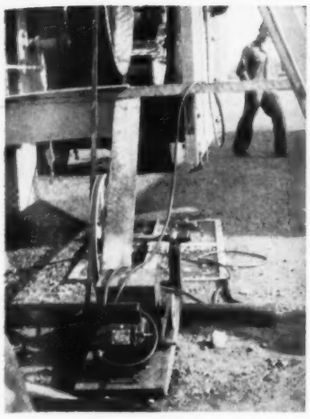
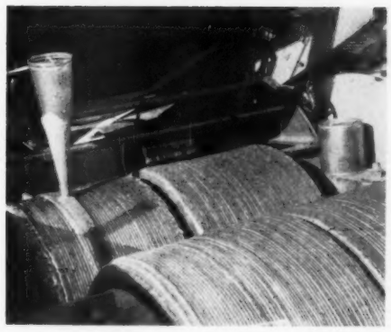


A portable drive unit is end-belted to a small hydraulic transmission which, in turn, is belted to an intermediate sheave and then to the main drive sheave of the crusher rolls. This arrangement was devised by the Lincoln County Highway Department, Wis., to provide graduated speed control.



Alloy flux is fed from the cone hopper on the semiautomatic submerged-arc-welding gun. The gun travels on a threaded shaft, in a frame that rests on angles supporting the rock feed hopper. The final layer of deposit is being applied to the roll, left rear.

enough without loosening for correct flux coverage over the arc.

Hardsurfacing beads are applied in bands about 2 inches wide, spaced 6 or 7 inches apart. This helps to assure even heat distribution and avoids overheating. The gun is then back-traversed and the skipped areas filled. Deposits are not applied to any surface where the temperature is over 350 degrees F.

The final step in hardsurfacing is applying the double-layer transverse lug strips. Six strips, laid down manually, are spaced equally about the circumference to assist in dragging larger chunks of aggregate through the crusher rolls.

Alloys used

The initial build-up layer is Lincoln H-535 agglomerated flux, containing various ferro-alloys in calculated amounts to give a deposit of about 70 Rockwell B hardness. The number of layers depends on the amount of roll wear, but the final layer uses a higher alloy flux, H-560.

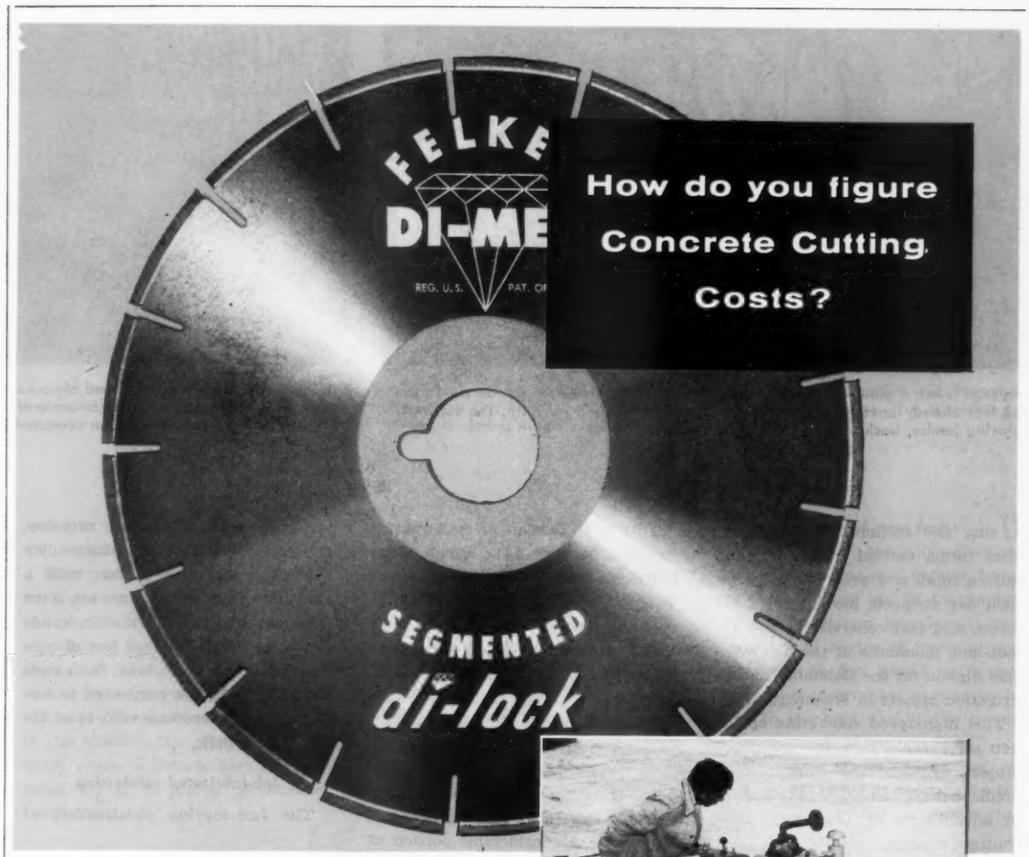
The arc voltage with the 3/32-inch-diameter L-60 wire and the H-535 alloy flux is 30; the current setting range is 275 to 300 amperes. Voltage with the H-560 finishing flux is 30 to 32, and the current is 300 to 325 amperes. Identical travel speed is maintained with both fluxes, although a change is quickly effected through the roll drive setup on the circumferential deposits.

If there is considerable service wear on the surface, particularly in the center areas, a thicker deposit is applied for a flat-finished surface. A small bronze cylinder, connected to the welding ground clamp, bears against the roll surface and transfers the current across the arc without interruption. THE END

Rotary drill operations depicted in new film

A 16-mm sound, color film showing the operations of its Model M8 rotary drills has been produced by Davey Compressor Co., Kent, Ohio. The 20-minute-long film shows Davey drills working in strip mines, quarries, on highway construction jobs, etc.

Prints of the film are available from the company for showings before association meetings, conventions, and trade groups.



One contractor estimated his on a cost/foot basis and was surprised at the outcome with

di-lock Diamond Blades

On a large airbase job the contractor had 450,000 lineal feet of control joints to be sawed to a depth of 3½ to 3¾ inches. When bidding this job he estimated blade costs at 25 cents per foot—a figure which he felt dangerously low for the conditions encountered. Here's how the job shaped up in actual production.

Using a multiple blade saw equipped with two Felker Di-Lock FDC-60 blades, 5535 lineal feet were cut before blades were exhausted. Reducing this total footage to cost per foot, the astonishing figure of 9.2 cents per foot was obtained...*little more than ⅕ of the original estimated cost!*

Felker manufactures a complete line of concrete saws from 36 h.p. (illustrated above) to 9.2 h.p. models. Ask for literature and prices.

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Whatever the application...on concrete, on masonry materials of all kinds, in hard, tough going you'll find longer life, more cutting speed, lower ultimate blade costs when you specify Felker Di-Lock Diamond Blades! Ask your Felker distributor to recommend the best bond type for your material. You'll be happy with Di-Lock's results!

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World's largest manufacturer of Diamond Abrasive Cut-Off Blades and Machines

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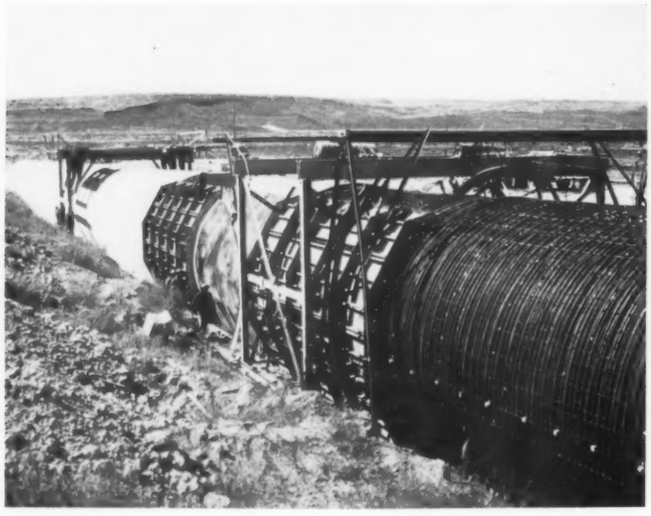
Reinforcing is assembled on the 3-mile-long Wahluke siphon for the Columbia Irrigation project in Washington. Fast work put the job ahead of schedule.

Two sections ast

In a single day, crews strip siphon forms ove a



As steel is set, a gantry moves the first 24-foot-long Blaw-Knox outside steel form 48 feet ahead, leaving an intervening section for the second form. The concrete-placing jumbo, background, travels the same rails.

The forward inside form is carried ahead on a gantry supported by rails at the invert. It carries a 60-foot-long monorail beam and chain hoist to leapfrog rail sections through the form. Hinged side forms are retracted when the form is moved.

Crews e
of the g
Similar

Using two sections of Blaw-Knox steel forms carried by gantries on rails, a small and well equipped crew each day stripped, moved, and reset forms, and cast concrete for two 24-foot-long monoliths of the big Wahluke Siphon for the Columbia Basin's irrigation project in Washington.

This high-speed concreting operation set a rapid pace for the entire project, enabling the contractor to predict completion a full four months in advance of the February, 1959, contract deadline.

The general contractor for the $6.2 million project is E-W Construction Co., Eugene, Ore. But E-W is providing only the engineering and management on the site; all actual construction operations are sublet.

Six primary contractors share the work. Diversion and care of the water, plus 365,000 cubic yards of excavation, are being handled by Lewis Construction Co., Kennewick, Wash. The 45,000 cubic yards of concrete in the siphon, piers, and structures is being placed by Lewis Hopkins Co., Pasco, Wash.

Of the several steel items, Gilmore-Skoubye, Oakland, Calif., is furnishing and placing the 12 million pounds of reinforcing. Gunderson Bros. Engineering Corp., Portland, Ore., is furnishing the steel liner and steel pipe, which are being erected by Steel Construction Co. of Oregon, Portland. The job of painting the steel was sublet to Gustafson Coating & Blasting Co., Spokane.

This U. S. Bureau of Reclamation contract is a part of the large Columbia Basin Project which distributes water from Grand Coulee Reservoir over a large area in central Washington. The Wahluke Siphon will deliver a potential 2,000 second feet of water to a 100,000-acre area on the south slope of the Saddle Mountains known as the Wahluke Slope.

Without this water, the Wahluke Slope is an almost barren area used only for the winter grazing of cattle and sheep. A considerable portion of the area is within the limits of the protective zone surrounding the Hanford Atomic Energy plant. But since it is no longer considered necessary to maintain the large buffer zone around the plant site, some of the land is being returned to agriculture.

The Wahluke Slope is separated from the rest of the Columbia Basin area by a long valley containing Scooteney Lake. Since there is no practical way of bringing water around the valley, the siphon is being constructed straight across it.

Water will enter the siphon at elevation 992.8 and drop 167.8 feet to a low elevation of 825 at the Scooteney Lake crossing. The siphon rises again to elevation 967.9 at its outlet.

The lake crossing is made with a heavy steel-pipe section supported on concrete piers spaced 120 feet apart. The pipe walls for these long spans range in thickness from 1 1/16 inches over the piers to a minimum of 5/8 inch.

At both sides of the lake crossing, the siphon consists of a 15-inch-thick monolithic concrete section with a 3/16-inch steel liner. There are some 6,000 linear feet of this section in addition to the 2,500 linear feet of pipe crossing through the lake. Both ends of the big tube are reinforced monolithic concrete sections with 17 or 18-inch-thick walls.

Job-fabricated reinforcing

The fast-moving construction of the concrete barrel is led by Gilmore-Skoubye's crews placing the reinforcing steel. Straight bars are delivered to the job in stock lengths and cut and bent in an "open-air shop" on the site. Cutting the No. 14 bars and bending them into circles of 8-foot radius requires some reasonably heavy machinery. In this shop, too, the many smaller bars are also cut and bent, and some of them are welded together.

A pair of Michigan 24-T truck

As the crane spots the bucket, the man on the placing jumbo makes the dump. Subhoppers feed tremies that lead to the point of placement. Jackson electric vibrators are operated through the pour gates in the side of the form.

The su
white-p
Process

ctionast daily for big irrigation siphon

by RALPH MONSON
field editor

iphon forove and reset them, then cast two 24-foot sections of 15-foot 4-inch-diameter line

Crews expand the inside form into place. A Beebe 5-ton winch on the lower left leg of the gantry, powered by a 1-hp electric motor, is used to pull the gantry into place. Similar hoist and drill arrangements move the outside forms.

As soon as forms are set, concrete work begins. This Wagner Mixermobile with 2-yard mixer discharges to a Gar-Bro 2-yard bucket that is swung to the forms. The Michigan crane, background, is setting reinforcing steel rings.

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cranes with 50-foot booms and 25-foot jibs handles the heavy bundles of steel at the shop, loads the fabricated pieces on trucks and trailers, and swings them into place for the crews, which tie the bars immediately ahead of the concrete crews.

Actually, several operations precede the placing of reinforcing steel. Lewis Construction Co., the excavation and grading contractor, uses a Cat D9 with dozer and Ateco ripper, two DW21 and two DW10 scrapers, and four D8's to grade most of the siphon trench.

Fine-grading of the invert is done by a shop-made trimmer, riding on rails and pulled by a Michigan tractor shovel or a D4 tractor. This rig cuts the invert to grade in suitable material, or cuts the subgrade to a 2-inch tolerance where the native material is unsuitable for foundation. In these areas, a 6-inch base of processed gravel is placed to stabilize the footing.

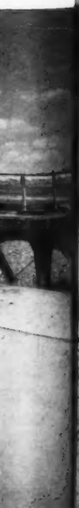
Although there is no specification requirement, the contractor finds it advantageous to place a ¾-inch grout skin coat over the subgrade. This provides a firm bearing for the stub angles which support the reinforcing steel, and it keeps the fine-graded base from being damaged.

On this subgrade, the reinforcing crew assembles the continuous cage of circumferential and longitudinal bars. This operation is usually 100 feet ahead of the concrete crew.

Two sets of steel forms

Two sets of specially designed Blaw-Knox inside and outside forms are used to place two 24-foot monoliths of the siphon barrel each day. The forward section of forms always leap-frogs 48 feet ahead each day, leaving an intervening section to be filled in the next day by the second set of forms.

The inside forms are carried on gantries supported on rails at the invert. The rails, in turn, are supported



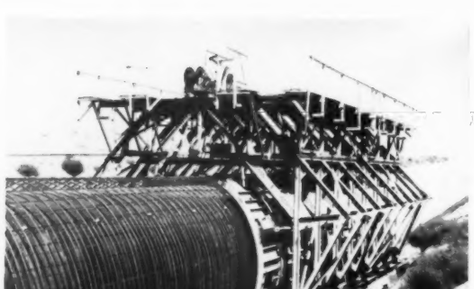
p. Sub-
brators

The surface of the siphon is sprayed with Protex white-pigmented curing compound. Crews use a Hunt Process spraying machine and a hand-held spray.

The Michigan 175-A dumps aggregates to a hopper with a Simplicity vibrating screen. This removes fines before the stone reaches the conveyor belt.

Batches are turned out by this Noble Mobile plant. The operator of the shovel, right, has stopped to operate the electric controls. A Fruehauf cement trailer is unloading.

A 48-foot-long 15-foot-diameter steel liner section, which will be incorporated into the line at a low point, waits on a trailer near the stretch where it will be used.



Whenever the 48-foot liner sections are used, the two 24-foot outside Blaw-Knox forms are joined to provide a 48-foot-long form for the concrete barrel.

(*Continued from preceding page*)

by jacks resting on pads on the invert grade. The crown form lies on a gantry and the hinged side forms are retracted or pushed out into place by jacks on the gantry legs.

The gantry which carries the inside form also carries a 60-foot-long monorail beam which projects both ahead and to the rear. A chain hoist on the monorail enables the crew to reach back for sections of the rail and leapfrog them ahead. A Beebe 5-ton winch powered by a 1-hp electric drill pulls the gantry ahead from one position to the next.

Riding the same rails used by the invert trimmer is a gantry that straddles the siphon to handle the outside forms. This gantry is also propelled along the rails by a Beebe 5-ton winch powered by an electric drill motor. Skil and Black & Decker motors are being used. These winches are mounted on the gantries, and the crew has only to pull out and anchor the relatively light cable to enable the gantries to move themselves.

The crew can strip and reset both sets of forms in about four hours, leaving plenty of time to complete the concrete placement the same day. As soon as the forms are set, a concrete-placing jumbo, which also rides the outside rails, is rolled into position over the form, and placement begins.

Concrete placement

Although it looks like a simple platform straddling the barrel form, the placing jumbo is an important factor in getting the concrete work done quickly with a minimum number of crew members. Six Gar-Bro sub-hoppers are mounted in the platform of the jumbo, and Gar-Bro 12-inch rubber tremies lead from these hoppers to the openings in the form.

Concrete is delivered to the invert section through 20-foot-long tremies. As the pour continues, 12 and 8-foot tremies are substituted. Concrete is consolidated with Jackson 2½-hp electric vibrators working through the same openings in the forms.

The 74 cubic yards of concrete in each 24-foot-long section is placed in about two hours and by a small crew. One reason for the small crew is that the deck of the placing jumbo and the sub-hoppers on it are always in plain sight of the crane operator. He swings the Gar-Bro 2-yard buckets over the jumbo and spots them over the hoppers without assistance. Only one workman is required on the jumbo deck, and he simply operates the bucket gates.

Tractor shovel feeds plant

To supply the concrete for the project, Lewis Hopkins Co. set up a Noble Mobile batch plant which also functions with a minimum of manpower. One man uses a Michigan 175-A tractor shovel to keep the 60-ton aggregate bins supplied with material.

The aggregates are delivered to the site by truck and stockpiled with the aid of a dozer. The Michigan carries the material from the stockpiles to hoppers feeding an inclined belt to

$14,000,000 sewer project –
Working on a section of a 14 million dollar metropolitan sanitary sewer, Koehring® 605 dragline (left) scoops a wide ditch out of loose, shifting sand. It was teamed up with another Koehring 605 (a 36-ton crane), which set concrete pipe into place. Notice size of giant sewer line in foreground.

Fills a production gap –
Here is a special size machine in the Koehring line that fills an important production gap on many jobs — big, heavy-duty 805. Capacities: 2-yard shovel — 2 to 3-yard clamshell or dragline with 50 to 150-foot boom — 52-ton crane (based on 75% rating).

Introducing . . . the new 435
Latest addition to the big Koehring line on rubber, this new 435 truck crane safely lifts up to 35 tons (with 40-foot boom at *15-foot* radius). That's based on conservative 85% rating. It quickly converts from fully equipped machine to roadable machine — removable counterweight, boom, outriggers reduce weight for highway travel.

Check the chart — pick the size and type that best fits your needs — then phone Koehring distributor for a demonstration.

K831

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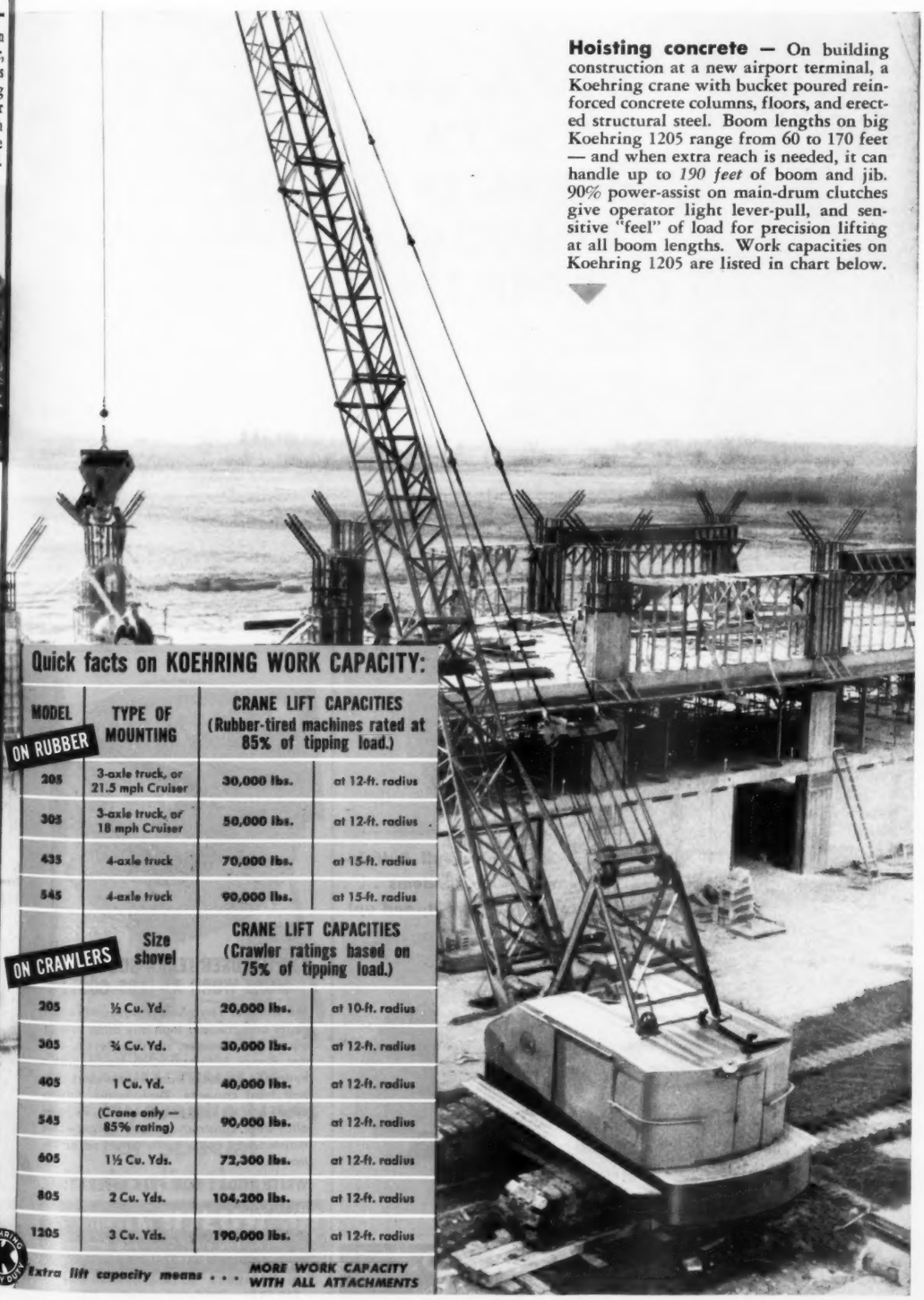
the distributor atop the bins. Sand is fed into a low hopper which feeds directly to the inclined belt. Coarse aggregates are dumped into a high hopper which feeds a Simplicity rescreen. This removes excess fines before the aggregates are placed on the belt.

The electric controls for the distributor on top of the bins, the rescreen, and the inclined elevator are all mounted on a pole near the feed hoppers. This mounting enables the tractor-shovel operator to drive up alongside the pole and make all necessary adjustments without leaving the seat of his machine.

Using a bending machine, crews of the reinforcing subcontractor shape No. 14 bars into a circle for the siphon barrel.

This Michigan 24-T truck crane with 50-foot boom and 25-foot jib loads a trailer with bundles of reinforcing rings.



Hoisting concrete — On building construction at a new airport terminal, a Koehring crane with bucket poured reinforced concrete columns, floors, and erected structural steel. Boom lengths on big Koehring 1205 range from 60 to 170 feet — and when extra reach is needed, it can handle up to *190 feet* of boom and jib. 90% power-assist on main-drum clutches give operator light lever-pull, and sensitive "feel" of load for precision lifting at all boom lengths. Work capacities on Koehring 1205 are listed in chart below.

Quick facts on KOEHRING WORK CAPACITY:

MODEL	TYPE OF MOUNTING	CRANE LIFT CAPACITIES (Rubber-tired machines rated at 85% of tipping load.)	
ON RUBBER			
205	3-axle truck, or 21.5 mph Cruiser	30,000 lbs.	at 12-ft. radius
305	3-axle truck, or 18 mph Cruiser	50,000 lbs.	at 12-ft. radius
435	4-axle truck	70,000 lbs.	at 15-ft. radius
545	4-axle truck	90,000 lbs.	at 15-ft. radius
ON CRAWLERS	Size shovel	CRANE LIFT CAPACITIES (Crawler ratings based on 75% of tipping load.)	
205	½ Cu. Yd.	20,000 lbs.	at 10-ft. radius
305	¾ Cu. Yd.	30,000 lbs.	at 12-ft. radius
405	1 Cu. Yd.	40,000 lbs.	at 12-ft. radius
545	(Crane only — 85% rating)	90,000 lbs.	at 12-ft. radius
605	1½ Cu. Yds.	72,300 lbs.	at 12-ft. radius
805	2 Cu. Yds.	104,200 lbs.	at 12-ft. radius
1205	3 Cu. Yds.	190,000 lbs.	at 12-ft. radius

Extra lift capacity means . . . **MORE WORK CAPACITY WITH ALL ATTACHMENTS**

Cement is delivered by truck-trailer from the Lehigh mill at Metaline Falls, Ore., and transferred to the 600-barrel cement bin by a horizontal screw-and-bucket elevator. Batching is fully automatic, and the 2-yard dry batches are delivered to 2 or 3-batch trucks, as required.

At the point of placement, the batch trucks deliver the materials to a Wagner 7M Mixermobile with a 2-yard mixer. The mobility of the Mixermobile is proving very useful on this job. On some days, concrete was placed at three separate points along two or more miles of the siphon. The Mixermobile simply moved from one place to another, and it required only minutes to make ready to move or to set up at the new location.

A Link-Belt Speeder Model HC-108 truck crane handles the Gar-Bro 2-yard buckets from the Mixermobile to the forms. The truck crane, with its 80-foot boom, is able to reach the high pier forms as well as the siphon barrel pours.

As soon as the forms are removed from the concrete, the surface is sprayed with Protex white-pigmented curing compound applied with a Hunt Process power pump and hand-held sprays. The compound is applied both inside and outside of the pipe.

Placing steel liners

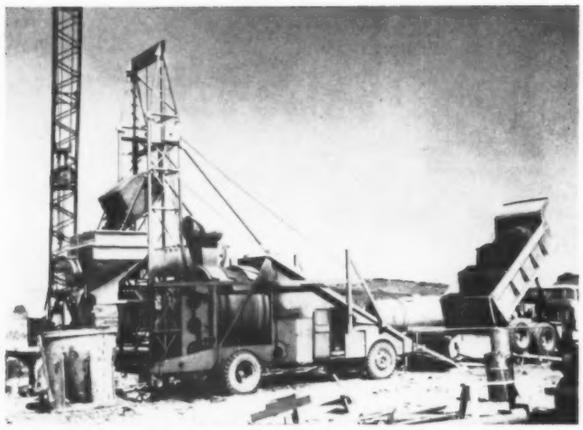
The 15.33-foot-diameter steel liners for the low portions of the siphon are fabricated in sections 48 feet long, weighing 11 tons each. These big sections are shipped by barge from Portland to Ringold, Wash., on the Columbia River, then transported 25 miles to the job by truck-trailers. The Link-Belt 35-ton truck crane picks the big sections off the trailers and lowers them onto pedestals previously set to grade in the trench.

Each new section is snugged up against the previous section with a Coffing hoist, and the joint welded with an automatic welding machine powered by four Lincoln 300-amp welding generators. The joint is made in two passes with Lincoln Fleetweld 5 welding rod.

Since this liner is relatively flexible, it has to be carefully supported inside to retain its true round shape while the concrete is placed. Steel Construction Co. of Oregon, the erection contractor, devised a system of I-beam support rings for this purpose.

With the liner, there is no need for

For more facts, use Request Card at page 18 and circle No. 242



The Wagner Mixermobile, able to move swiftly and easily from place to place, is used to turn out concrete for one of the piers that carry the siphon across Scooteney Lake to a portion of the Columbia Basin area.

(Continued from preceding page)

an inside form. Two of the 24-foot sections of outside form are joined together to match the 48-foot length of the liner, and a special jumbo carries this form. This same jumbo also serves for the concrete placing. The jumbo, traveling on rails placed on a berm on both sides of the siphon, is moved ahead by a winch powered by an International UD-2 engine. This winch, with a three-speed transmission, can develop a line pull of 61,000 pounds. A Beebe 10-ton winch attached to the rear of the jumbo serves as a holdback on steep grades and pulls the jumbo backward when necessary.

Lake crossing

The siphon is carried across Scooteney Lake on a series of heavy concrete piers. Since the footings had to be excavated down to solid rock, a compacted core dike was built along the line of the piers, and the area inside was dewatered by a series of Stang 8, 10, and 12-inch pumps. The pier stems, some as high as 90 feet, were formed with wood and poured by the combination of Mixermobile, crane, and buckets.

The heavy-walled pipe for this section was supplied in 30-foot lengths weighing approximately 30 tons. A single falsework crib between each pair of piers supports the heavy sections while the connecting welds are made. All welded joints in this pipe are X-rayed.

With the continued irrigation of the Columbia Basin, ground water levels are rising. This, together with runoff which reaches Scooteney Lake, causes a continued rise in the lake level. To keep the lake level between elevation 810 and 825, a wasteway and control structure are being constructed under the siphon contract.

This canal requires some 70,000 cubic yards of rock excavation, and this is a big job for Lewis Construction Co., the excavation subcontractor. Rock is drilled with wagon drills powered by I-R compressors to a maximum depth of 42 feet. Excavation is done by a Koehring 604 dragline using an Esco 2¼-yard bucket. Lewis' D9 with its Ateco ripper was also used extensively in the rock.

Personnel

The over-all coordination and management of the project for E-W Construction Co. are provided by project manager Lloyd Shilling, superinten-

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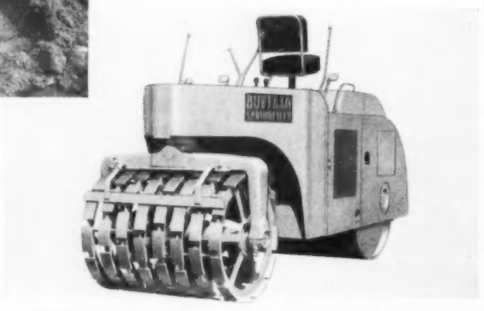
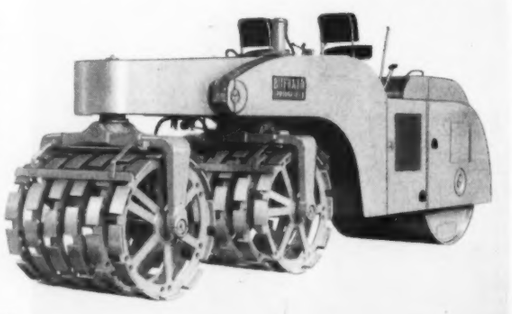


NOW available in 2 sizes for all Buffalo-Springfield® 2-axle and 3-axle tandems . . . any model (from 5-ton metal weight, and up).

Quickly interchangeable . . . readily added to B-S-R rollers now working in the field.

Combining the best compaction benefits of both the projecting lug-type roller, and smooth-faced roll, Buffalo-Springfield 2 and 3-axle tandems offer you a unique method for faster, better compaction on a wide range of materials. Optional segmented roll, mounted in guide-roll position, applies pressure in a flat foot-print pattern . . . and is followed by smooth drive-roll pressure, *all in a single pass.* Result: job-performance tests show 3 to 7% greater compaction densities, as compared with conventional rolling methods.

Segmented roll is faced with staggered rows of heavy steel pads, which operate on an *"interrupted pressure"* principle of compaction. The pads individually enter loose materials with a minimum of displacement sideways or forward . . . then leave the material without disturbing compacted areas. All compaction effort is exerted in a *downward direction.* Segmented roll is, of course, readily interchanged, as your work requires. This is a real time-and-money-saving opportunity worth looking into! Better call your Buffalo-Springfield distributor about this right away.



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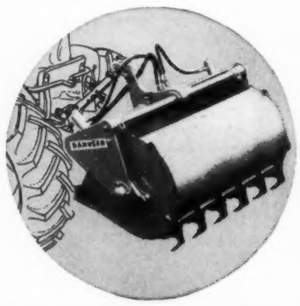

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Excavation of 365,000 cubic yards of material—70,000 cubic yards of it rock—was subcontracted to Lewis Construction Co., Kennewick, Wash. Part of the work involved this wasteway channel, which is being dug out by a Koehring 604 crane with 85-foot boom and Esco 2¼-yard dragline bucket.

dent Kenneth Beck, and engineer J. M. Ayers. Superintendents for the several major subcontractors are Bob Lewis and Freeman Beebe for Lewis Construction Co., J. K. "Ken" Riggle for Lewis Hopkins Co., Harvey Rutherford for Gilmore-Skoubye, Clyde Wells for Steel Construction Co. of Oregon, and Roy Gustafson for Gustafson Coating & Blasting Co.

The Columbia Basin Project of the Bureau of Reclamation is under the supervision of project manager Phil Nalder, who has headquarters at Ephrata, Wash. The construction engineer of the Eltopia Construction Division, in which the Wahluke Siphon is located, is A. J. Thomas. The office engineer of the division is E. K. Nesbitt, and the field engineer is Phillip Noble. Heading the work right on the job site are assistant field engineer John W. Hanna and chief inspector Lloyd Russell. THE END

The Arizona State Highway Commission has a $94,478,000 highway budget for fiscal year 1958–59.

Booklets give tips on road maintenance

The Calcium Chloride Institute has recently released two new illustrated booklets on road maintenance. "Maintenance Tips for Unpaved Roads", a 36-page booklet with charts and tables, includes maintenance objectives and tells how to maintain unpaved roads in all seasons. "Calcium Chloride for Ice Control", Manual IM-1, contains in 30 pages recommendations for treating, storing, and spreading abrasives, as well as for the direct application of calcium chloride.

Single copies may be obtained free of charge by writing to the Calcium Chloride Institute, 909 Ring Bldg., Washington 6, D. C.

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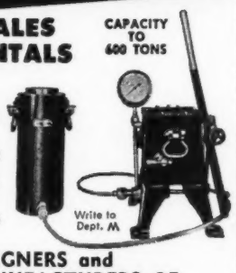

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New **Longer-Wearing** Pattern in Wire Rope Styles!

After three years of extensive field trials this, the newest of Roebling's wire ropes, is now ready to go to work for you on a service basis that will exceed that of *the wire rope you are now using.*

Roebling Herringbone* combines the best features of both regular and Lang lay rope constructions; being made up of two *pairs* of Lang lay strands and two strands of regular lay. The regular lay strands separate the two pairs of Lang lay strands. Thus, in one rope you have the superior flexibility and abrasion resistance of Lang lay and the greater structural stability of regular lay.

For the past three years, under all kinds of conditions, Herringbone has been used for general hoisting, holding and closing lines, shovel ropes, wagon scraper ropes and dragline ropes. The results have been wonderful . . . excellent flexibility, exceptional resistance to shock and abrasion, smooth, easy operation around drums and over sheaves, smooth spooling properties and structural stability unequalled by other rope for the same job.

There has never been a better time—or a wider need—for a wire rope that returns so much service for its cost. And, in addition to being a top performer on the job, Herringbone eliminates the necessity of stocking Lang lay for one purpose and regular lay for another.

You are invited to get in touch with your Roebling distributor or write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for further and fuller details on the *investment* qualities of this new and highly serviceable rope. *Reg. appl. for

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Equipment, coordination pay off for ready-mix firm

Ready-mix plants, concrete-block plant serve Georgia counties; two-way radio enables batch trucks to operate efficient

Operating a ready-mix and concrete-block plant requires not only good, efficient equipment, but careful coordination as well. Both of these features have been incorporated by Glynn Concrete Co., Brunswick, Ga., and have helped in the steady growth of this organization.

Glynn Concrete was taken over in 1951 by Seaboard Construction Co., which purchased an existing facility that had an outmoded, limited-production-type concrete plant to produce ready-mix concrete. The equipment consisted of a Heltzel 400-barrel cement storage bin and a 50-ton, two-compartment aggregate bin, both units having less than a 2-cubic-yard batch capacity.

New units added

The Heltzel cement bin was moved to a new spur track, and an Aiken-Harrington 400-barrel ground storage cement silo was added. A new Aiken-Harrington 150-ton, three-compartment aggregate bin was erected adjacent to the cement bin. Six-cubic-yard-capacity weigh batchers were installed on both the cement bin and the aggregate bin to permit the complete batching of 6-cubic-yard transit mixers with one weighing operation.

The aggregate bin is charged by an Aiken-Harrington inclined, open-bucket elevator, and aggregates are directed into the three compartments by a manually operated swivel chute. Sand and gravel are delivered by hopper-bottom rail cars riding a spur alongside the aggregate and cement bins. Sand is supplied by the Dawes Silica Mining Co. from its Forest Pond, Ga., plant. Gravel is received from the Becker County Sand & Gravel Co., Inc., Camden, S. C.

As the aggregates are received, the hopper-bottom rail cars are spotted over a 10×10-foot undertrack hopper which feeds the bucket elevator. Cement is received in covered hopper-bottom rail cars, with the bulk of the company's requirements coming from the Penn-Dixie Cement Corp. plant at Clinchfield, Ga. Cement is received by an under-track hopper leading to a screw conveyor, which in turn feeds an enclosed bucket elevator; it is then discharged into either the Heltzel 400-barrel bin or the Aiken-Harrington 400-barrel ground storage silo. Both of the bin platforms are enclosed to protect the scale and batching equipment from weather and dust.

The company has also completed

Operator checks end-point of product running through one section of Standard's Whiting, Indiana, refinery.

The Heltzel two-stop ready-mix concrete plant charges a Jaeger mixer on an International truck. The plant has a 400-barrel ground storage cement silo. Hopper-bottom rail cars ride a spur alongside the bins to deliver sand and gravel.

Glynn Concrete Co.'s block plant consists of a concrete batch plant and a Stearns Model 15 block machine capable of turning out 900 8×8×16-inch blocks per hour. Aggregates are charged to the bin via the inclined belt conveyor, and cement is loaded into the silo and bin by an enclosed bucket elevator.

the installation of a remote-control batching system. An 11×11-foot tower, located 45 feet from the bins and standing about 7½ feet above the ground, houses the push-button control panel and remote indicating dial scales. The control system, designed and installed by the Superior Steel Fabricating Co., Atlanta, Ga., consists of pneumatic cylinders which actuate the necessary valves and gates. These cylinders are controlled by 4-way solenoid valves. The Toledo Scale Co. furnished and installed the remote indicating scale equipment. Under this new system, the plant operator, stationed in the glass-enclosed tower, controls the entire batching cycle through a push-button panel and at all times has visual control over the trucks as they are being batched.

Operating out of the Brunswick ready-mix plant are 10 ready-mix trucks, consisting of one 3-yard mixer, three 6-yard mixers, and six 5-yard mixers. The mixers consist of both Jaeger and Smith units, with the truck fleet predominantly International.

Mobile radio

Coordinating the movements of these trucks as well as the ones operating out of the St. Marys, Ga., plant, set up in July, 1955, is a Motorola two-way radio system. At the headquarters on the plant site, orders are received from customers and ready-mix trucks are dispatched. The truck operator, using the mobile radio, notifies the plant each time he leaves the yard and as soon as he arrives at the customer's job. At the job, the driver notifies the plant of any special instructions that the customer might have.

In addition to providing a constant check on the location of every truck, the company's two-way radio system plays an important role in emergencies. A distress call from the driver of a stalled truck immediately starts a service truck on its way.

The ready-mix operation at Brunswick, covering an area with a radius of about 40 miles, handles all of Glynn County and part of the adjoining counties. The second plant at St. Marys, Ga., 60 miles from Brunswick, handles all of Camden County located south of Glynn County.

Block plant

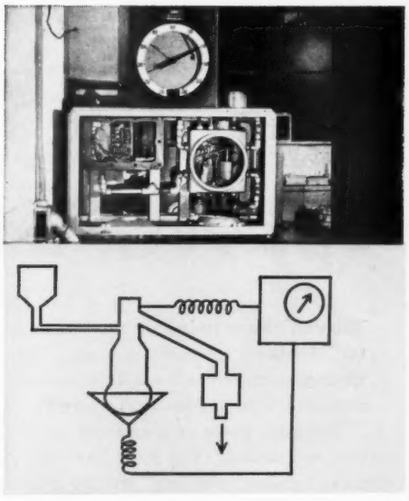
Due both to the absence of a concrete-block plant and to increased industrial expansion around the

ngets by Automatic end-point testing device developed by Standard Oil research men makes certain of the uniform quality of diesel fuel and gasoline delivered to you.

ntists at Standard Oil never stop in their drive to improve and improve again the uniform quality of the petroleum products bear the Standard Oil trade-mark. These engineering research tists have now created wholly new instruments for performing -continuous physical analysis *automatically.*

such instrument automatically performs the physical analysis determines end point. Using it, refineries maintain a continuous ection of the temperature at which gasoline and diesel fuels are pletely distilled. To you, this means that Standard is able to tain a constant control over the uniformity and high quality 1) the fuels you use to power your diesel engines and (2) the line for your truck fleets. It also means that power-producing oleum products, with their constantly controlled end point, burn ormly, give you uniform high performance.

is part of the research pay-out, the "something more" research ds into the products you buy from Standard. This is your return Standard's investment in research. And now there are 48 ict offices in the 15 Midwest and Rocky Mountain states to serve Call the one nearest you. **Standard Oil Company (Indiana), 910 n Michigan Avenue, Chicago 80, Illinois.**



Automatic end-point tester works this way. A small sample is placed in an electrically heated flask. The temperature is measured and recorded during a heating cycle when distillation is accomplished. Distillate is condensed and drained, the flask temperature is lowered by introduction of the next sample, and the apparatus is ready for another test.

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(*Continued from preceding page*)

Brunswick area, Glynn Concrete set up a block plant in 1953. Located at the ready-mix site, the high-production block plant is a Stearns Model 15 machine capable of turning out 900 8×8×16-inch blocks per hour.

The aggregate and cement bins and the Stearns block machine are all protected by a Butler metal roof building. An inclined belt conveyor is used to transfer aggregates from the stone and sand stockpiles to the bin compartments. Cement is delivered via a rail spur, and stored in a ground silo and an enclosed compartment of the aggregate bin. The two are charged by means of screw conveyors and an enclosed bucket elevator.

Concrete blocks are cast by the block machine on steel pallets, which are placed on a rolling rack. The racks, when they are completely loaded with pallets, are then placed into a battery of steam kilns for curing. Steam is injected into the closed kilns and built up to a temperature of 180 degrees F over a 4-hour period. The steam is then shut off and the temperature allowed to drop overnight, permitting the opening of the kilns the following morning. The blocks are then removed from the kilns and stored in the yard.

Blocks are kept on hand and not sold until tests have been made in the company's lab to make sure the blocks have attained the required strength. This testing feature, run on every day's operations, assures the customer of getting specification blocks and adds to the reliability of the producer.

Personnel

H. J. Friedman is the president, and H. L. Friedman, the vice president and general manager of Glynn Concrete. Others making up the company team are Ray Scarboro, assistant manager; Bill Sloan, ready-mix concrete foreman; Marvin Johnson, block plant foreman; and Tom Gash, sales manager. THE END

Methods and materials for building construction

A completely revised third edition of "Materials and Methods of Architectural Construction" contains information on the commonly used materials and the customary methods of combining them in the construction of buildings. Written by Harry Parker, the late Charles Merrick Gay, and John W. MacGuire, the book presents and explains modern design formulas and current working unit stresses.

The materials section discusses the various building materials, flooring and roofing systems, doors and windows, and exterior and interior trim. The methods section deals with such topics as the mechanics of materials, various types of construction, foundations, and excavating and waterproofing. The 724-page book abounds in diagrams.

Priced at $12, the book may be purchased from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Formulas for rigid frames illustrated in new book

A completely revised "Rigid Frame Formulas", by A. Kleinlogel, is the second American edition of the original German work, "Rahmenformeln", and contains nearly all of the practical single-span types of the rigid frame. The formulas for the bending moments and reactions on rigid frames and many loading conditions may be used to secure results by the direct substitution of numerical values.

For those who are experienced in advanced analysis, the Mohr equation, aided by diagrams in the book, gives a ready and rapid method for computing displacements of rigid-frame structures. The frames can be used as units in dealing with cases of more highly indeterminate structures.

This edition contains 114 rigid-frame shapes, 1,578 figures, and formulas for all static quantities for single-panel frames occurring in steel, reinforced concrete, and timber construction.

The 460-page book, priced at $14.50, may be purchased from Frederick Ungar Publishing Co., located at 105 E. 24th St., New York 10, N. Y.

Highway cost allocation covered in HRB bulletin

Reports on studies in five states are compiled in the Highway Research Board's Bulletin 175, "Allocating Highway Cost Responsibility". The first paper presents the objectives, procedures, methods, and some of the findings of a three-year study in the state of Washington.

A study in North Dakota compares the tax assignments to various vehicle type and weight groups which would be made under the ton-mile, the cost function, and the incremental methods of highway taxation. A Montana

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Watch a TD-24 perform—see why rock-movers call it the "rock-dozing special." Visualize how this load-control and bonus capacity make the TD-24 the ideal pusher, or outstanding for non-stop, big scraper pulling! See your International Construction Equipment Distributor for a demonstration.

report provides an analysis of the motor-vehicle tax responsibility determined by the incremental and ton-mile allocation methods.

The methods employed and the comparative results obtained in a Kentucky study are covered in the fourth paper. This paper also discusses credit financing. A Rhode Island study details the approach used in a "general fund" state to select the method of financing the proposed long-range state highway program.

The $1.20 bulletin may be purchased from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Metal lath specifications compiled in new booklet

A complimentary 20-page booklet, "Specifications for Metal Lathing and Furring", may be obtained from the Metal Lath Manufacturers Association, Engineers Bldg., Cleveland 14, Ohio. This revised 1958 edition includes specifications for solid and hollow partitions; wall furring; and metal lath attached directly to wood supports.

Also included are specifications for beam and column protection for fireproofing; and reinforcing for exterior stucco. Tables summarize the various spans and spacings for supporting metal lath and plaster ceilings, and fire-resistive ratings are listed.

SAME honors Cassidy

The Society of American Military Engineers has awarded Brig. Gen. William F. Cassidy, U. S. Army Corps of Engineers, the 1957 Wheeler Medal for outstanding leadership in the flood-fighting and disaster-relief activities of the Corps during the California floods of 1955–1956. Gen. Cassidy is division engineer of the South Pacific Division, Army Engineers, in San Francisco.

New commercial standard for power cranes, shovels

The Power Crane & Shovel Association has completed, with the cooperation of the U. S. Department of Commerce, a new commercial standard for power cranes and shovels. This standard, CS 90-58, which supersedes CS 90-49 and CS 90-E-47, contains revisions and additions, and includes data on both domestic machines and machines for export.

The purpose of the standard is to establish uniform methods to guide manufacturers, distributors, and users in specifying power cranes and shovels and in presenting data about them. The standard includes sizes of shovels from ¼ to 2½ cubic yards, and cranes from 2½ to 60 tons. Also included are illustrations, tables, and lists of items for specification requirements and dimension definition.

Copies are priced at 20 cents each and may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., or in limited numbers from the Power Crane & Shovel Association, 75 West St., New York 6, N. Y.

Award paper discusses plastic design in steel

"The Plastic Behavior of Structural Members and Frames", by George C. Driscoll, Jr., and Lynn S. Beedle, has been reprinted from the Welding Journal of The James F. Lincoln Arc Welding Foundation. The authors are recipients of the 1957 A. F. Davis Silver Medal Award of the American Welding Society.

The paper is a summary report of demonstration tests conducted during Lehigh University's summer course, "Plastic Design in Structural Steel". Flexure and buckling tests on simple beams and a flexure test on a continuous beam are described in the paper. It also reports on short columns subjected to combined bending plus axial load, a test on a full-size welded connection of the type found in industrial buildings, and on a complete gabled portal frame tested to its ultimate load.

Copies of the paper are available without charge to engineers, professors, students, and fabricators, and may be obtained from the James F. Lincoln Arc Welding Foundation, P. O. Box 3055, Cleveland 17, Ohio.

R-B&R contracts to build 50 oil-drilling platforms

Raymond-Brown & Root, C. A., will erect 50 concrete deep-water drilling platforms in Venezuela's central Lake Maracaibo for Mene Grande Oil Co., a subsidiary of Gulf Oil Co. The job is part of a general expansion of Mene Grande's activities in the area.

R-B&R uses long, prestressed-concrete cylinder piles to support the heavy loads without lateral bracing. The piles resist deterioration in the lake's highly corrosive water.

R-B&R is a jointly owned subsidiary of Raymond International, Inc., New York City, and Brown & Root, Inc., Houston, Texas.

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Put one track in high range, the other in low—and the TD-24 pushes straight ahead, despite the tremendous offset load of benching-out unshot rock strata. P. C. Cooper, Blountsville, Tennessee, first rented this TD-24—then bought it because of its rock-'dozing performance!

An 8-unit TD-24 fleet owned by Rusciano and Sons Corp., replaced 8 big competitive crawlers—because TD-24 performance "measured up" to the toughness of this big road job. There was a considerable tonnage of granite and other rock to bulldoze—on the White Plains (N.Y.) Section of the 'Cross Westchester Expressway!

"With the TD-24, I can outwork any other machine where you have to push and turn with a big load," declares Operator Dan Olmstead, for Gibbons & Reed, Salt Lake City, Utah. "The TD-24 keeps the load moving, because you don't lose power braking a track." The TD-24 is spreading rock on a tough million-yard project—widening U. S. 40 in the Truckee River canyon near Reno.

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Talk about tight jobs!

Trains at 20-minute intervals, cramped quarters, and live "third rail" plagued this subway project

Limited to hand tools, a Bonaco crew works on a stretch of subway track in New York's IRT line during the 20-minute period between trains. A covered "third-rail" is at lower right.

How does a contractor install a large section of track and switches in a busy subway tunnel without disrupting train traffic?

That's the problem Bonaco Construction Co., New York City, faced when it tackled the job of modernizing a stretch of New York City's Lexington Avenue IRT line. The $250,000 job called for the installation of two double crossovers, each connecting a central express track with flanking north and southbound local tracks.

Normally, this express track is used only for bypassing stalled or disabled trains in case of emergency. And in the past, because of insufficient crossovers, trains had to travel long distances before they could be switched on or off this emergency track. The new system of double crossovers will provide much greater flexibility, allowing easy switching from any direction.

Job conditions were tricky. All materials had to be hauled in on work trains, and there was practically no room for storage. No power equipment other than small tools could be employed. The maximum train interval was only 20 minutes. And finally there was the hazard of 650-volt "third rails" which covered the work area.

Careful planning

The key to the job was sharp planning. Every man had a specific task to perform at a specific time. With such short intervals of work time, there was no room for guesswork. Large segments of track had to be removed and new ones replaced and aligned before the next train came through.

Bonaco started work on the central emergency track, which was taken out of service by the city's Transit Authority. All rails and ties were removed and hauled away at night by work trains. New track materials were also brought in by work trains, but unloading was a tedious job. Every 20 minutes, the work train had to pull out of the way of the next passenger train, and it had to travel a long route to get back.

Because of limited storage area material handling was a problem. Only essential materials could be brought

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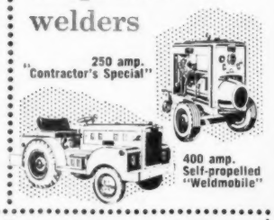

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in, and they had to be stockpiled close to their point of use to reduce rehandling. All materials had to be spiked down to prevent pieces from coming loose and derailing trains or short-circuiting the third rail. To make things more complicated, the existing ballast had to be cleaned in place by hand, stockpiled at the side while the new track was installed, and then replaced.

Work on local tracks

New York's subway system is aptly termed "the safest railroad in the world," and the quality of its track installations is a good reason. Rails are well guarded, alignment tolerances are rigid, and maximum steel bracing is specified. For example, in the IRT job there were two L. B. Foster diamond crossovers, eight special frogs, eight conventional frogs, and eight switches—complete with maximum guardrail, clamps, plates, and braces. Running rail is 100-pound ARA type B, and the "third rail" is 150-pound type. Ties are red oak.

When as much work as possible was done on the center track, Bonaco tackled the active local lines. Only preparatory work could be accomplished here during the day shift, because of the 6-minute intervals between trains, so steelwork was done at night when more time was available. In fact, on the northbound line, traffic was suspended completely from midnight until 5 a.m. On the more active southbound line, however, work periods were limited to 20 minutes, except for a few occasions when complicated work was required and a 40-minute period was allowed.

Replacing ties

One of the trickiest operations was replacing old ties with new ones without disrupting traffic. Often a tie could be pulled out and another pushed in its place. But in many areas quarters were so cramped that old ties first had to be sawed into pieces before they could be extracted. Several of the ties had to be removed in this way; then new ties were placed longitudinally between the rails and rotated into position. This was tough enough with conventional ties, but some were as long as 23½ feet.

To get as much work done as possible between trains, Bonaco organized the job carefully. When a section of rail had to be replaced, for example, a maximum number of spikes was removed ahead of time. After the train went through, the remaining spikes were extracted quickly, and new rail and accessories moved in by hand, aligned, and spiked just enough to permit safe travel for the next train. The remaining spikes and accessories were placed later. Often, it was necessary to cut old rail in place to accommodate the new pieces. And new splice holes also had to be cut.

Another hazardous phase of the job was adding new side approach fixtures to the live "third rail". To do this, men stood on insulated pads and drilled directly into the live rail. It was tricky work, but so carefully done that there were no accidents.

With the exception of power drilling with small tools and portable generators, all work was done by hand, including heavy handling. The moving of some frogs, for instance, required the entire 16-man crew.

Personnel

Joseph Gesualdi, Bonaco's vice president in charge of field operations, supervised the job. All electrical work was done by Hose-Mc Cann Corp., New York City, represented by James Baker. The project was directed by Irving E. Bronkhurst, division engineer for the New York City Transit Authority, headed by C. L. Patterson, chairman. THE END

"He's trapped in there, all right. Now the question is —is Elmer worth tearing this section apart for?"

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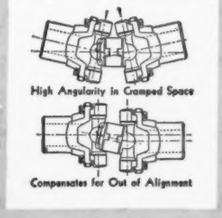

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Avoid legal pitfalls

Storm-sewer contractor did not trespass

THE PROBLEM: *A municipal storm sewer was being constructed in a residential section. The city supposedly had secured the necessary right-of-way and staked it out. Inadvertently, it had not acquired the right to use a 5-foot strip staked out across plaintiffs' land. The contractor innocently bulldozed three trees out of that area, but immediately moved out his men and equipment when ordered off the property. Later, the city condemned the strip, and plaintiffs sued the contractor on the ground that he was a trespasser when the trees were removed. The contractor did not act wantonly; was he liable?*

THE ANSWER: No. (Glade v. Dietert, 295 S. W. 2d 642, decided by the Texas Supreme Court, reversing a contrary decision by the Texas Court of Civil Appeals, Ft. Worth, 286 S. W. 2d 955.) But three justices of the Supreme Court—a minority—disagreed and thought that the contractor should be held liable.

The majority opinion recognizes that the courts of the country generally impose liability upon a contractor who negligently or deliberately trespasses upon the property of a third person, even if, in doing so, he acts as agent for the owner.

But the opinion cited the Tennessee Supreme Court's decision in the case of Wood v. Foster & Creighton Co., 235 S. W. 2d 1, where a city agreed to secure right-of-ways for a street-state-highway widening project. The state let the work to a contractor. It was decided that the contractor was not liable for work done on land where no right-of-way had been acquired by the city. Only the city would be liable to the landowner. The Tennessee court reasoned that the contractor ought not to be required to check every order given by the public authorities, since this would increase the cost of public work. This court added that the contractor should not be held liable for following orders carefully.

The Texas court also cited a decision by the Iowa Supreme Court to the same general effect. (Newton Auto Salvage Co. v. Herrick, 212 N. W. 680.)

The Texas court also noted that even if the contractor technically trespassed in removing the trees, plaintiffs were compensated through the condemnation award subsequently made against the city.

The gist of the dissenting opinion is to the effect that when the trees were removed the contractor committed a trespass which the city could not authorize because it had not yet acquired an easement. Liability for that trespass was not wiped out by the later condemnation proceedings, even if the award covered the value of the trees.

What the appellate courts of many other states might decide in a similar factual situation is problematical. Contractors must weigh the advisability of checking on the acquisition of right-of-ways against the risk of being regarded by some court as a responsible trespasser.

Competitive bidding law

THE PROBLEM: *South Dakota law requires that contracts by public corporations for construction of improvements and purchase of materials and so forth are to be let after competitive bidding, if the price exceeds $500. A city needing gravel placed 74 separate orders with a material supplier for deliveries involving less than $500 each within a period of eight or nine months. The gravel was not billed as it was delivered, but $500 was paid monthly. Plaintiffs, taxpayers of the city, sued to restrain payment of an unpaid balance of $2,076.30. Was an injunction against payment properly allowed?*

THE ANSWER: Yes. (Fonder v. City of Sioux Falls, 71 N. W. 2d 618, 53 A. L. R. 2d 493, decided by the South Dakota Supreme Court.)

The court reasoned: By permitting contracts involving less than $500 to be awarded without competitive bidding, the legislature did not intend that the prohibition against such award involving more than that $500 could be circumvented by multiple small open-market purchases of materials. In this case there was a present need for gravel costing several thousand dollars, even though

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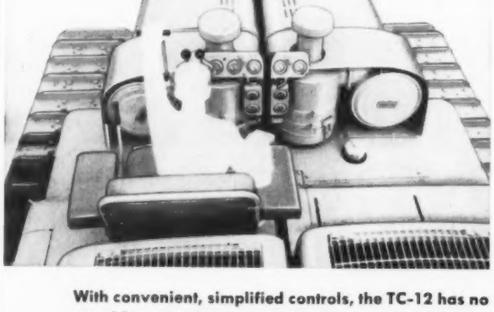
As a dozer, this Twin-powered Crawler provides unmatched work-ability because of its ease of handling, smooth push power and brute strength.

For heavy ripping work, you can count on unequalled drawbar pull and plenty of stability to do a really fast and thorough job.



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With independent track drives, there's no dea track drag when turning—maneuverability of th big TC-12 with its full power shift saves seconds o every cycle whether you're push loading scraper dozing or pulling big equipment. And with unitize assembly, good design of component location an equipment mountings, this "Euc" crawler provide easy accessibility for service and maintenance.

Have your Euclid dealer give you all th facts on the new TC-12 . . . you'll find it' your best buy by far where big tracto performance is needed.

EUCLID DIVISION of GENERAL MOTORS, CLEVELAND 17, OHI

the gravel was to be used at different locations within the city.

An annotation of the decision at 53 A. L. R. 2d 501–516, digests other decisions pro and con on this subject, including among others, the following: An Illinois case where a contract for a sidewalk in front of four lots was split into four separate contracts, awarded the same contractor, to avoid a statute resembling the South Dakota statute. In another Illinois case, it was decided that a township could not avoid a statute requiring contracts involving $200 or more by buying $4,000 worth of stone and paying for it in warrants each for about $199. In Iowa, a city tried unsuccessfully to avoid a $5,000 limit by letting four separate contracts for the repair of four streets, where the contractor's proposal and an authorizing resolution of the city counsel treated the work as a single project.

Right-to-work law

THE PROBLEM: *Tennessee, like some other states, has a statute that forbids an employer to discriminate against union or non-union help. Plaintiff contracted to erect a steel tank, using only union labor. Defendant union refused to provide the necessary workmen, causing the owner to cancel the contract and award it to another contractor. Was the union liable to the plaintiff for loss of the job?*

THE ANSWER: No. (Finchum Steel Erection Corp. v. Local Union 384, International Association of Bridge, Structural and Ornamental Ironworkers, 308 S. W. 2d 381, decided by the Tennessee Supreme Court.)

The court decided that plaintiff's contract to employ only union labor violated the Right-to-Work Law. The contract being void, plaintiff was not entitled to damages, even though his performance of it was frustrated by the union.

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Owner, driver are liable

THE PROBLEM: *The driver of a noisy transit-mix truck drove along a road toward two horseback riders, despite their shouting and waving him to stop because the truck was frightening the horses. One of the riders, a 20-year-old girl, was thrown from her horse, and received an injury that prevented her from following an established career as a professional tennis player. Was an award of $95,000 damages against the owner of the truck and the driver excessive?*

THE ANSWER: No. (Connolly v. Pre-Mixed Concrete Co., 319 Pac. 2d 343, decided by the California Supreme Court.)

An income tax law point

THE PROBLEM: *United States citizens temporarily employed on construction work in Guam sued the U. S. government for a refund of income taxes paid to the Guam government. Was the suit dismissible on the ground that payment to the Guam government was not payment to the United States?*

THE ANSWER: No. (Jennings v. United States, 155 Fed. Supp. 571, decided by the United States Court of Claims.)

The court decided that the Guam government acted merely as an agent for the United States in collecting the taxes.

Contracting with counties

THE PROBLEM: *Under Iowa law, a contract for county public work should be made in the name of the county. A contract for repairing a county building was made in the name of the county board of supervisors. Was it valid?*

THE ANSWER: Yes. (Board of Supervisors of Winneshiek County v. Standard Appliance Co., 87 N. W. 2d 459, decided by the Iowa Supreme Court.)

Buggy injures employee of concrete supplier

THE PROBLEM: *During the night construction of a grain elevator an empty "mud buggy", that was being lowered, struck and injured a concrete supplier's employee who was standing beneath it. Evidence tended to show that the prime contractor's employees were careless in lowering the buggy in the darkness without giving any warning to those who might be below. There was also evidence indicating that the injured man was not careless in failing to see the descending buggy or in being where*

(Continued on next page)

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in maneuverability . . . service accessibility . . .

in functional design . . .

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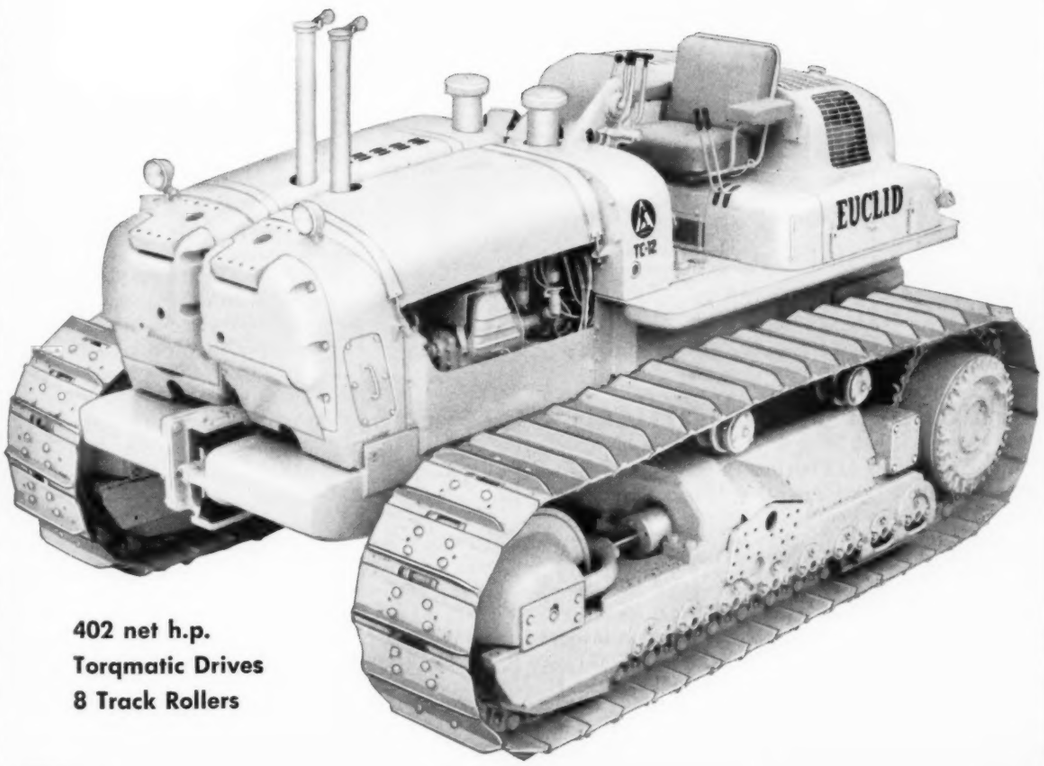

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he was. Did that justify a jury in fixing the blame upon the contractor?

THE ANSWER: Yes. (Raile v. Toes, 84 N. W. 2d 199, decided by the Nebraska Supreme Court.) The court quoted what it had said in a previous case:

"Where two or more independent contractors, or a general contractor and one or more subcontractors, are engaged in work on the same premises, it is the duty of each contractor, in prosecuting his work, to use ordinary and reasonable care not to cause injuries to the servants of another contractor, and an employee of one contractor may recover against another contractor for injuries caused by the negligence of the latter contractor or of his employees acting within the scope of their employment, in the performance of a duty owed by such contractor to the injured employee."

Mistaken overpayment

THE PROBLEM: *In computing the balance due under a construction contract, the terms of which had been revised, a mutual mistake occurred. The owner was actually entitled to a refund of $611, whereas it paid the contractor $8,854. Was the owner entitled to compel the contractor to refund the overpayment?*

THE ANSWER: Yes. (General Motors Co. v. Enterprise Heat & Power Co., 86 N. W. 2d 257, decided by the Michigan Supreme Court.)

The court said that where the payee has not innocently placed himself at such disadvantage that he will lose money on being required to refund the overpayment, he must refund even if the payer was negligent in making the overpayment.

Void city sewer contract

THE PROBLEM: *The Illinois Cities and Villages Law forbids the incurring of expense or the making of a contract involving expenditure, unless a covering appropriation has previously been made. Violation of that provision renders the contract void. A city employed an engineer to design a sewer system, payment to be made out of the proceeds of revenue bonds to be issued. The services were rendered but the city abandoned the sewer project and no bonds were ever issued. The engineer sued for $36,022.26, with interest to cover his charges. Was he entitled to collect?*

THE ANSWER: No. (Beling v. City of East Moline, 144 N. E. 2d 865, decided by the Illinois Appellate Court, Second District.)

The court referred to decisions of the Illinois Supreme Court in similar cases, where it was declared that those dealing with public authorities are bound to know what limitations are placed by law upon their contracting powers. The mere fact that the contracting party has been permitted to incur great expense in performing an illegal contract does not bar the municipality from asserting the illegality.

Contractor is liable to a trespassing child

THE PROBLEM: *A contractor stored material and equipment, and also burned trash, on a vacant lot in a residential neighborhood. The foreman had been warned of the danger to children who, attracted by the stored material, were permitted to play on the lot. The foreman replied that the children should stay away. Late one afternoon—apparently after the contractor's employees had left for the day—a 7-year-old boy was severely burned by the dying coals of a trash fire. The bed of red-hot coals was covered by gray ashes. Was the contractor liable, under the general rule that one who maintains a dangerous condition on his premises that naturally attracts trespassing children is liable for resulting injury to them, if steps to prevent such accidents are not taken?*

THE ANSWER: Yes. (Tucker Brothers, Inc., v. Menard, 90 So. 2d 908, decided by the Florida Supreme Court.)

The decision was strongly influenced by the facts that the trespassing had continued for some weeks and the foreman had been requested to guard against just such an accident as occurred. But the Supreme Court left undecided the question whether the contractor would have been liable if there had been a flaming fire of burning trash, which would have warned even a child. In this particular case, the danger was concealed by the gray ashes.

Lease of equipment

THE PROBLEM: *Plaintiff leased motor scrapers to defendant contractor. Under the terms of the lease, the contractor was to return the scrapers to the plaintiff's yard, and rental was to be from month to month. The defendant did not return the scrapers, but merely told the plaintiff where he could get them. Was the plaintiff entitled to rent for the scrapers up to the day he repossessed them?*

THE ANSWER: Yes. (Rackliff v. Coronet Construction Co., 321 Pac. 2d 50, decided by the California District Court of Appeal, Second District.)

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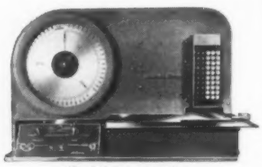

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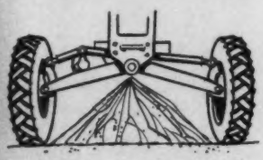
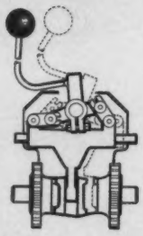
See these big advantages of Allis-Chalmers motor graders in a working demonstration

FORTY FIVE

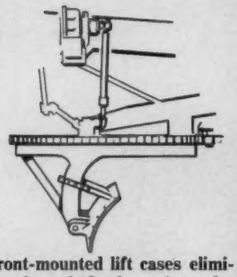


Extra high axle and throat clearance means bigger loads at the blade . . . no power wasted pushing material with axle or circle.



Toggle-type controls are exclusive with Allis-Chalmers. Controls engage or release clutches surely, quickly, without wrist-snapping backlash.

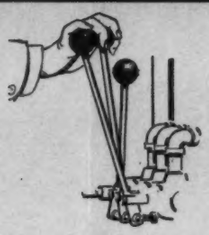
Fully enclosed power steering—full, easy control under any conditions. Hydraulic unit and lines are inside the frame . . . protected from damage.



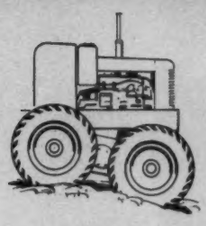
Front-mounted lift cases eliminate long shafts that twist under heavy loads. Short shafts hold blade steady even on washboard roads.

Model D

Revolving circle and heavy tubular drawbar provide exceptionally stable mounting for the ROLL-AWAY moldboard . . . assure precision grading, trouble-free operation.

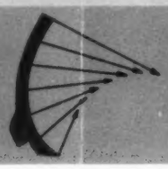


Convenient hydraulic controls—easy to operate. Two levers fit into one hand to control circle lift. Shift lever is next to the seat and directly over the transmission for positive, easy shifting.



Positive tandem drive gives you four driving wheels under the heavy end of the grader . . . providing maximum traction at all times to make the Model D easier riding, smoother blading.

And in both, the exclusive ROLL-AWAY moldboard



The ROLL-AWAY moldboard rolls dirt up and ahead to eliminate packing, reducing friction . . . gives you more performance per horsepower, more production per gallon of fuel.

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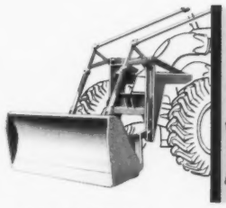
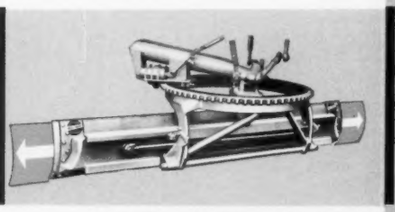


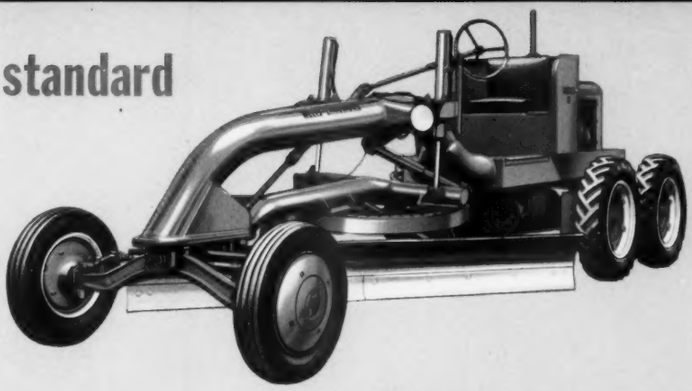
8-foot bulldozer



Hydraulic, shiftable moldboard

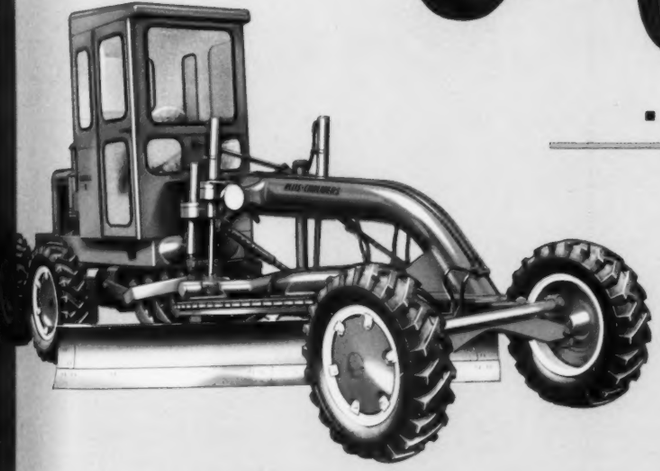
model D standard

50 brake hp
8,800 lb (gasoline)
9,350 lb (diesel)



...for big economy on

model D special



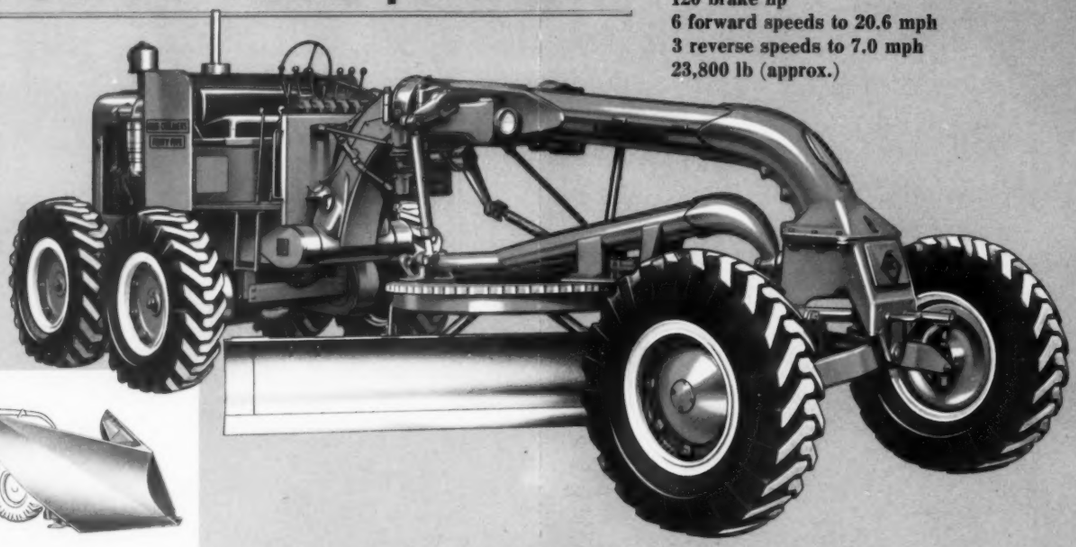
50 brake hp
10,900 lb (gasoline)
11,450 lb (diesel)
4 forward speeds to 25 mph (approx.)
1 reverse speed to 3 mph (approx.)
All-steel cab*

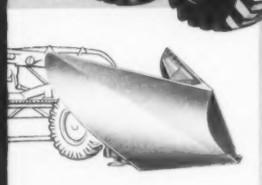
Shiftable moldboard*
Hydraulic scarifier*
Leaning front wheels*
Power circle turn*

**Also available with the Model D Standard as optional equipment.*

FORTY FIVE performance

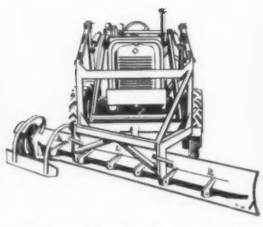
120 brake hp
6 forward speeds to 20.6 mph
3 reverse speeds to 7.0 mph
23,800 lb (approx.)



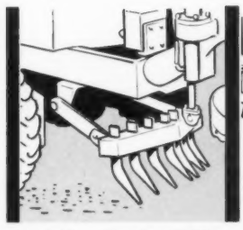


V-type snowplow

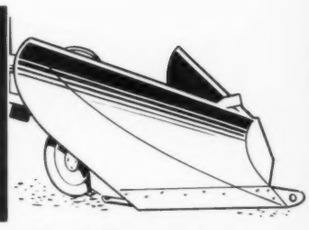
5/8-yd, rear-mounted loader



Interchangeable shoulder maintainer



Midship-mounted scarifier



Blade and V-type snowplows

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Look ahead...*move ahead*...and stay ahead

...with Allis-Chalmers motor graders

preferred by more operators... bought by more users every day

Matching motor graders to job needs efficiently and economically is more important today than ever before. That's why cost-conscious owners in every part of the country are choosing Allis-Chalmers. And their operators approve that choice because these motor graders combine top performance with real comfort and handling ease. Whether you're interested in production or utility, take a close look at the advantages these increasingly popular machines offer you.

Soil foundation studies analyzed in HRB bulletin

Five papers in "Analyses of Soil Foundation Studies" discuss the overall problem of design and construction over soft foundation soils. The first paper in this Highway Research Board Bulletin 173 covers the magnitude and time-rate of settlement due to compression strains.

The second paper deals with the forces developed in piling due to negative skin friction as consolidation takes place in a soil layer through which a pile penetrates in passing to a firm, less compressible stratum. The third paper details four methods used in constructing embankments over marsh deposits. These include control of the rate of placement and use of berms; the removal of soft compressible material; the displacement of weak soil by the embankment; and the installation of vertical sand drains.

The concluding papers contain a review of the use of vertical sand drains over a period when design changed from an empirical approach to one based on theoretical concepts; and a simplified explanation of the theory and related computations for estimating fill subsidence on soft foundations.

Priced at $2, the bulletin may be purchased from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

"Sure they'll beat us to the moon! They have to pour a runway for us to land."

Portland cement is topic of new NRMCA bulletin

The National Ready Mixed Concrete Association has published a new bulletin, "Variations in Portland Cement", by Stanton Walker and Delmar L. Bloem, who presented the paper at a meeting of the American Society for Testing Materials. The bulletin is reprinted from the ASTM's "Proceedings".

Research for the bulletin was conducted by the laboratory sponsored jointly by the NRMCA and the National Sand and Gravel Association at the University of Maryland. The research shows that variations in cement, even within one source, may add seriously to the several other factors which complicate the control of concrete strength.

Single copies of the publication are available on request from the NRMCA, Munsey Bldg., Washington 4, D. C. Additional copies up to ten may be secured at 10 cents each; there is a discount for larger quantities.

Timken plans $51 million outlay for improvements

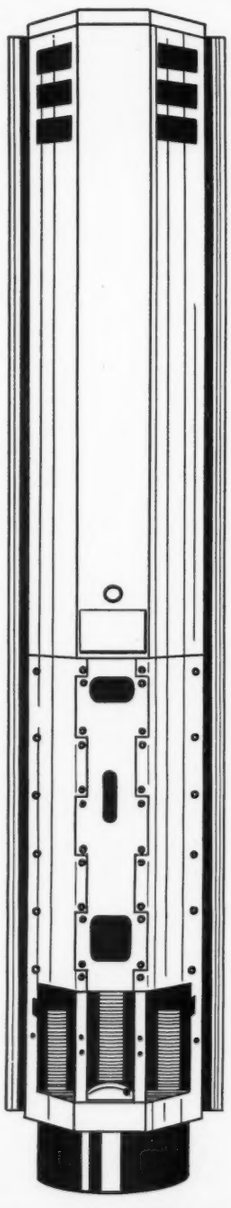
The Timken Roller Bearing Co., Canton, Ohio, has planned a $51 million capital outlay for new equipment and facilities during the next five years. More than $3 million worth of new grinding and finishing machinery has already been ordered for the Canton, Columbus, and Bucyrus plants. The Steel and Tube Division will have a new top charge furnace, an additional stirrer, and a new piercing mill. Timken's new Australian plant is to start operations this summer.

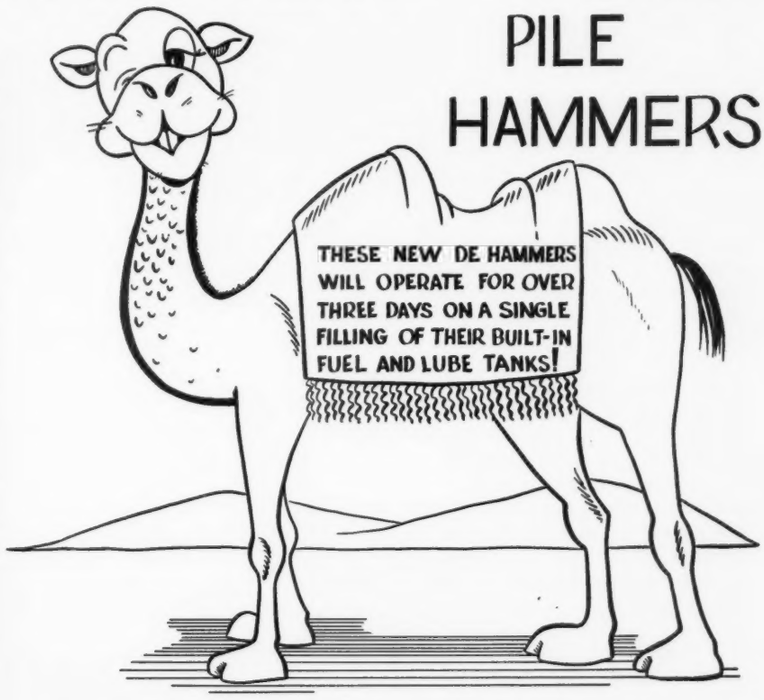
Building Stone Institute offers free brochure

"The Modern Stone Age Is Here", a color brochure, is available free of charge from the Building Stone Institute, 420 Lexington Ave., New York 17, N. Y. The brochure reviews pictorially the use of stone through the ages from the time of the cave man down to the present, and concludes with a 22×32-inch drawing of the city of the future.

Every type of quarried stone is depicted in natural color.

McKIERNAN-TERRY DIESEL PILE HAMMERS





WHERE MOBILITY AND ECONOMY OF OPERATION ARE MOST IMPORTANT, THE NEW, ECONOMICAL McKIERNAN-TERRY DIESEL PILE HAMMERS ARE THE LOGICAL ALTERNATIVE TO HEAVY INITIAL INVESTMENTS AND MAINTENANCE COSTS OF BOILERS, COMPRESSORS, AND HOSES. MODELS DE20 AND DE30, WITH STRIKING ENERGIES OF 16,000 AND 22,400 FT. LBS. RESPECTIVELY, OPERATE INDEPENDENTLY OF ANY EXTERNAL POWER SOURCE. THEY PROVIDE UNPRECEDENTED MOBILITY FOR HAMMERS OF THIS CLASS, THUS MINIMIZING "MOVE ON AND OFF" COSTS AND CUTTING JOB TIME. GRAVITY FUEL FEED AND IMPACT ATOMIZATION ELIMINATE TROUBLESOME TIMING AND INJECTION COMPONENTS. DE20 AND DE30 MOUNT IN STANDARD LEADS AND ARE OPERATED BY A SINGLE LOAD LINE. FOR FURTHER DATA, REQUEST BULLETIN 67.

ELIMINATES HOSE INVESTMENT AND COMPRESSOR OWNERSHIP EXPENSE

SIMPLE ASSEMBLY... MINIMUM NUMBER OF PARTS

McKIERNAN-TERRY CORPORATION

82 RICHARDS AVENUE DOVER, NEW JERSEY

MAKES ALL TYPES AND SIZES OF PILE HAMMERS & EXTRACTORS

For more facts, use Request Card at page 18 and circle No. 256

The B. M. Heede slip form rises in the shaft. Buggies of concrete are lowered on the skip of this Gold Medal tower. The steelworker wiring the reinforcing works one level above the concrete-placing crews.

Working on a narrow platform on top of the slip form, a crew member vibrates concrete contained by the tunnel lining and the slip form.

Slip forms used for shaft lining

Lower 72 feet of intake shaft is lined swiftly; crews work on three levels as pour is made

Slip forms found a new use recently: forming a concrete lining for the intake shaft of a filter plant.

This forming method, that is becoming more common on high structures, has seldom been used successfully below the ground. Whittle Contracting Co., Dallas, Texas, was aware of this fact when it started the $534,700 contract for the intake structure. But trying something new is not unusual for Whittle. With the help of B. M. Heede Co., Long Island City, N. Y., which designed the slip form and rented the jacking equipment, the contractor proved the new method effective in lining a vertical shaft.

Using a wooden slip form braced by a steel yoke, the contractor built the lower 72 feet of the 17-foot-ID shaft in 70 hours. Eight hydraulic jacks raised the form slowly and smoothly as concrete was placed in the 2-foot 4-inch gap between the form and the liner plates.

Dam makes job necessary

The building of the intake structure and the filter plant is a direct result of the construction of Oahe Dam. Even though the dam will block the Missouri River some 100 miles downstream, its reservoir will drown existing pumping stations that supply the city of Mobridge with water.

Although the full pool of the reservoir in the Mobridge area will not be formed until 1961, the U. S. Army Corps of Engineers and the South Dakota State Highway Commission are busy supervising construction on two railroad and two highway bridges, as well as many miles of relocated railroad and highways in the area.

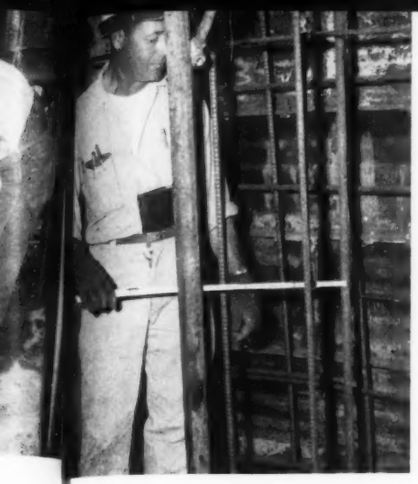
The Corps of Engineers is responsible for the work on the intake structure, while the filter plant is being built by the city of Mobridge. The plant will have a capacity of 1,370,000 gallons per day and will supply water to the city, to the Chicago, Milwaukee, St. Paul & Pacific Railroad, and the Montana Dakota Electric Co.

The plant is located on the east bank of the Missouri, several miles from Mobridge. The shaft of the in-

This easy handling Travel-Crew Cab model carries six men in all-weather comfort to the job site. It's rated up to 25,500 lbs. GVW. Plenty of leg room fore and aft. Seats measure over five feet wide. Third door means easier access to rear. Cab and chassis are warranted *work-ready . . .* for one, low *complete unit* price. Six-cylinder engine economy in compact-design or conventional models. Tandem-axle models to 33,000 lbs. GVW.

Bonus loadspace pickup bodies up to 8½ feet long "hotshot" all-purpose loads. Floor and side-walls of all-steel construction add unit tightness and longer life. Three men ride in comfort-seat is over five feet wide. More forward vision with the biggest distortion-free windshield in its class. Add to this an economical "six," more usable horsepower, high torque at low rpm.—and, component for component, you'll get a better buy!

INTERNATIONAL TRUCKS



This is one of the 1-inch jack rods which the hydraulic jacks climb as they move the form upward. The rods are encased in a 5-foot-long pipe which rises with the slip form. The hole formed by the pipe makes it possible for the jack rods to be salvaged.

L. Lutz, U. S. Army Corps of Engineers inspector, left, and Travis Fenner, superintendent, talk over the slip-form operation near the slip form itself, which is covered with protective paper. The wooden platform is the floor of the intake superstructure.

take structure is sunk into the side of the hill below the filter plant. Two intake tunnels reach out from the lower part of the shaft to the Missouri. A 20-inch discharge line carries the river water from the shaft to the filter plant at the top of the hill. The shaft serves as a pumping station, receiving water by gravity through the intake tunnels and then pumping it to the filter plant.

Slip form lines shaft

The 5.5-foot wooden slip form used to line the intake shaft was supported by a steel yoke with eight jacking points. The yoke was built of four horizontal double 6-inch channels that crossed each other like the lines of a ticktacktoe game. Vertical steel from the yoke supported the chord walers, which in turn carried the 1¼-inch tongue-and-groove sheathing. The diameter of the circular form was 17 feet.

Since the Gold Medal tubular tower occupied a 7×7-foot-square area at the center of the form, working room was very restricted. To give each other elbow room, men riding the slip form worked on three levels. Concrete was poured from a platform at the top of the wooden forms. Reinforcing steel was wired from a ringlike platform about 6 feet above the pouring operation. Finishers worked from a platform below the slip form.

The concrete was supplied by ready-mix trucks to ¼-yard buggies that rode the skip down to the slip form. Men used electric vibrators on the concrete as the form was pushed up at a rate of about 6 inches per hour. Steelworkers kept ahead of the form as they wired up the ¾-inch vertical reinforcing steel and ¾-inch horizontal hoop steel. Spot welding was held to a minimum on the reinforcing.

The eight hydraulic jacks could be operated either individually or as a group to control the position of the form. The 1-inch jack rods were contained by a 5-foot length of pipe which rose with the forms. The small hole formed by the pipe in the concrete made it possible to salvage the jack rods.

Only the lower 72 feet of the shaft was lined with the slip forms. The upper 26 feet was formed in the conventional manner, since the inside di-

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that haul six-man crews and full-sized loads.

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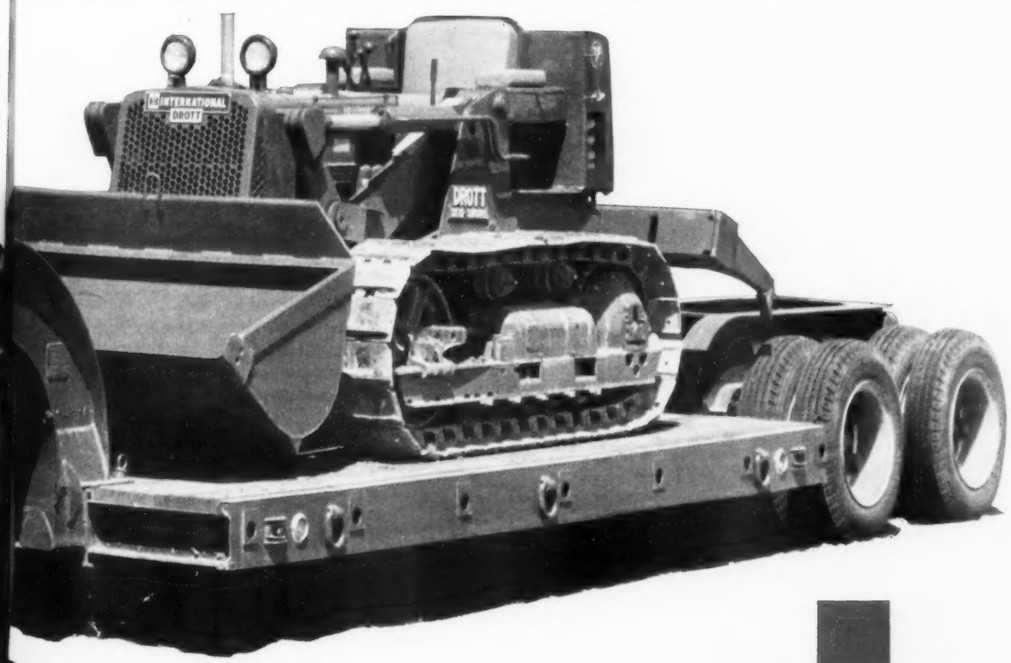

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Construction Equipment • McCormick®
Farm Equipment and Farmall® Tractors

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Inside the 4-foot-diameter intake tunnel, workmen build a brick and mortar wall between the American Cast Iron 20-inch pipe and the liner plate. This will block off a 100-foot section so that grout can be piped in between the pipe and the Commercial Shearing & Stamping liner plate.

At topside, crews keep grout moving into the intake tunnel. A Koehring 304 feeds sand to the two bins of the small batcher. Material goes to a Jaeger 16EL mixer, then to a Gardner-Denver grout pump powered by an Ingersoll-Rand 210-cfm compressor. Flexible grout lines lead down the slope to the tunnel.

(*Continued from preceding page*)

ameter changed from 17 to 22 feet.

Shaft excavation

Although the slip forming was the most spectacular part of the operation, a lot of hard work went into the digging of the shaft, which is approximately 100 feet deep. A Koehring 605 crane with an Owen 1½-yard heavy-duty clam cut down through about 65 feet of shale. In the lower 35 feet of the hole, the shale had to be broken up with pavement breakers before it could be clammed out. The use of dynamite was not allowed because of fractures in the shale.

Liner plates, manufactured by Commercial Shearing & Stamping Co., Youngstown, Ohio, retained the sides of the hole. The 16×37-inch steel panels were bolted together from the inside. After about 10 feet of the lining had been put down, grout was placed in the gap between the liner plates and the wall of the excavation.

Tunnels

Two tunnels, one above the other, extend from the lower part of the shaft to the river. The length of the 520-foot lower tunnel was extended an additional 460 feet by pipe placed in a trench. The 458-foot upper tunnel, for use only when the level of the river was raised by the dam, daylighted on a riprapped bank.

Driving the 4-foot-diameter tunnels through the hard shale was a challenge to crewmen. Three men—preferably small men with strong arms—tackled each heading. One man with a Gardner-Denver 35-pound pavement breaker chipped away at the face while another man mucked the material into a small mining car. A third man pushed the car to the portal. On the back-breaking job, the crew gained about 8 feet through hard shale in three 8-hour shifts. Tunnel liner plates were bolted in place just behind the heading.

After a tunnel was completed, American Cast Iron 20-inch pipe was centered in the tunnel and grouted in place. In this operation, a Koehring 405 crane worked the pipe down to the portal. Then it was placed on rail cars and pushed into the tunnel. After about 100 feet of the pipe had been blocked into position, a cutoff wall of brick and mortar was built around

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St. Louis County's Brentwood Boulevard gets rugged treatment from the constant parade of cars, trucks and buses. But Laclede's welded wire fabric helps this new resurfacing job weather the barrage of wheels.

Laclede's welded wire fabric holds the resurfacing material securely . . . reinforces it against creep and surface deterioration. Even at bus stops the movement and gouging of the pavement is minimized.

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USE THESE LACLEDE HIGHWAY STEELS FOR REPAIR WORK . . . AND FOR NEW CONSTRUCTION

welded wire fabric
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center joints
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SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

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the near end of the pipe. The wall held back the grout that was paid in from a topside mixing and pumping setup.

The mixture of fly ash, sand, and cement was turned out by a Jaeger 16EL mixer. A Gardner-Denver grout pump, assisted by an Ingersoll-Rand 210-cfm compressor, forced the grout through flexible tubing to the tunnel.

Bleeder lines were provided to take care of the air and water that were forced out of the tunnel as the grout was forced in. As the grout set up, it generally shrank and left a cavity at the top of the tunnel. This was filled up through a hole knocked in the cut-off wall when the next 100 feet of grouting was done.

Personnel

The Omaha District of the Corps of Engineers is responsible for the construction of Oahe Dam, as well as for the relocation work done in the Mobridge area. The area engineer for the Oahe project is John W. Sibert, Jr. Harry L. Dobbins is the resident engineer in charge of relocations around Mobridge. Leonard W. Bonhorst is the office engineer.

Travis Fenner superintended the project for Whittle Contracting Co. Other key men pushing the job to an early completion were George Miller, field engineer; Jim Sneed, general foreman; and Bob Kirchoff, slip-form foreman. THE END

Asphalt-paving technology covered in college text

The methods and technology for the design and construction of many types of asphalt pavements in use today have been incorporated in "Design and Construction of Asphalt Pavements", by J. Rogers Martin and Hugh A. Wallace.

Designed primarily as a college text, the book deals with such subjects as types of asphalt pavements, petroleum asphalts, mineral aggregates, design of hot-mix asphaltic concrete, and construction of hot-mix asphaltic-concrete pavements. Also covered are asphalt pavements and bases employing liquid asphalts, asphalt surface treatments and seal coats, reconstruction of old pavements, and design of the flexible system. Two appendixes contain data on mix-design methods and useful tables.

Priced at $11.50, the book may be purchased from McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y.

Smith Engineering offers slide rule

Smith Engineering Works, Milwaukee, Wis., manufacturer of Telsmith equipment for mines, quarries, and gravel plants, is offering a new slide rule to operators of such plants. The rule gives the capacities of all sizes of Telsmith jaw, gyratory, gyrasphere, and intercone crushers, and shows a screen analysis of the product from each of these crushers when set with any proper discharge opening.

The slide rule may be obtained free of charge by writing to the firm.

Clark film highlights Michigan tractor shovel

A 16-mm sound and color film, "A Matter of Record", has been released by the Construction Machinery Division of Clark Equipment Co. Highlighting the use of Michigan tractor shovels in municipality work, the 20-minute movie shows the machine's performance on a variety of city project jobs such as sanitary landfill operations, loading sand and gravel fill, handling road-shoulder maintenance, backfilling trenches, ripping up old pavement, and snow removal.

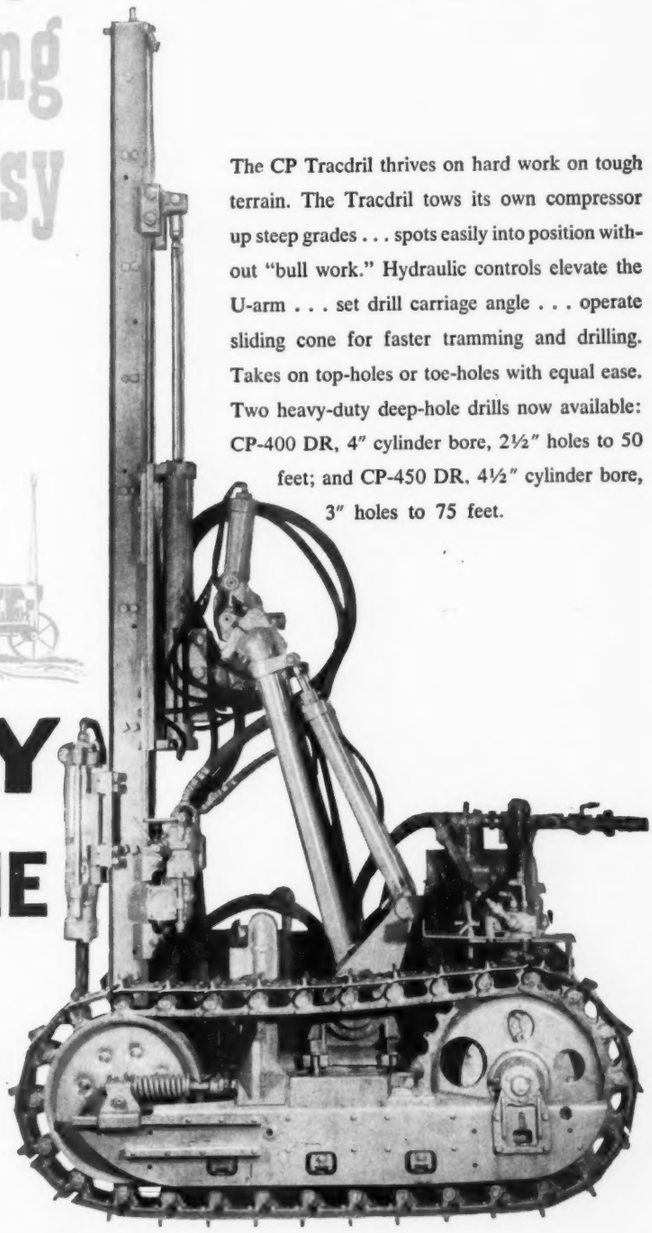
The film may be obtained by contacting your local Michigan dealer, or writing to the firm at Pipestone Rd., P. O. Box 599, Benton Harbor, Mich.

"Don't stop the game until a couple of them go broke. I need volunteers for overtime tonight."

1935...wagon drills made hole drilling easy

The CP Tracdril thrives on hard work on tough terrain. The Tracdril tows its own compressor up steep grades . . . spots easily into position without "bull work." Hydraulic controls elevate the U-arm . . . set drill carriage angle . . . operate sliding cone for faster tramming and drilling. Takes on top-holes or toe-holes with equal ease. Two heavy-duty deep-hole drills now available: CP-400 DR, 4" cylinder bore, 2½" holes to 50 feet; and CP-450 DR, 4½" cylinder bore, 3" holes to 75 feet.

TODAY IT'S THE CP TRACDRIL



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Maintenance and management of equipment are handled with

No red tape for 7,000 rigs

The biggest planning job for the Construction Department of Merritt-Chapman & Scott came with the award of the largest contract ever given a single contractor—the $108 million Glen Canyon Dam and Power Plant Project. Above, a sketch of the dam as it will look when completed. At right, excavation equipment is removing blasted sandstone from the spillway area.

Coordinating the movement and maintenance of over 7,000 pieces of construction machinery with a replacement value in excess of $61 million is a herculean task that might easily become buried under mountains of paper work.

That this has not happened for Merritt-Chapman & Scott, New York, N. Y., is largely due to a centrally organized equipment section that handles all assignments, maintenance, and recommendations for new purchases.

The section has a big job. The giant international organization had a construction backlog of $328,500,000 at the start of this year, and in 1957, for example, its work included projects which varied from a $4,963 pile-driving job in Ohio to the $108 million Glen Canyon Dam and hydroelectric project in Arizona.

Operations centralized

Merritt's Construction Department is located in the New York headquarters and is staffed by seven men

Now modernize your "Cat" Motor Graders with

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Torque Steering Booster...
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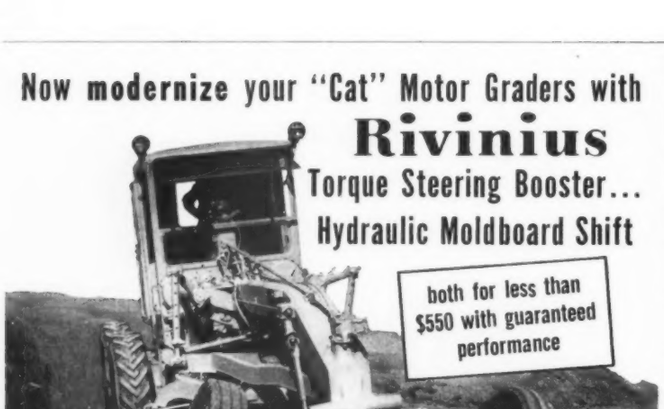

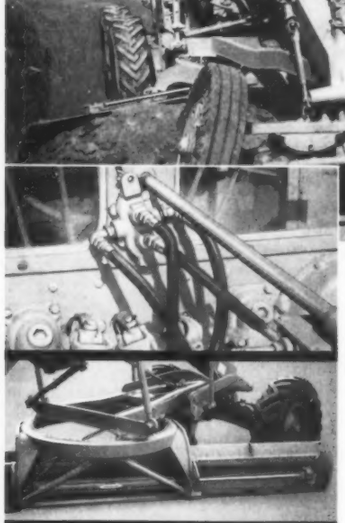

Put these cost-cutting Rivinius "twins" to work for you NOW at this new, amazingly low price! Less operator fatigue . . . less job time . . . better job quality mean more profit dollars from every job. Check these Rivinius features —

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for fast, accurate control from inside cab

- Fits any "Cat" 'grader with sliding moldboard
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- Shifts at the touch of a hand — correct position for every application
- Moldboard stops and locks at any position operator wishes
- Functions whether 'grader is moving or stationary
- Moves through full distance of travel in less than 20 seconds

TORQUE STEERING BOOSTER
for easy wheel-turning, even when standing still

- Fits any "Cat" 'grader
- Small, compact, lightweight — but amazingly powerful
- Easy to install . . . trouble-free design . . . few moving parts
- Holds grader from drifting — even on inclines
- Frees operator's hands for handling blade and other controls
- Mounts high above dust, dirt, moisture

SEE YOUR CATERPILLAR DEALER NOW . . . OR WRITE:

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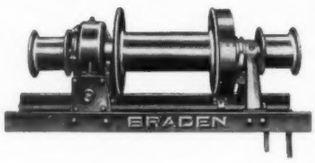
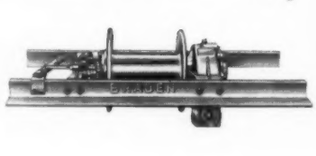
Check BRADEN features before you buy any winch. You'll soon learn why BRADEN is your best winch buy.

Cable drum shaft is made of special heat treated, highly ground and polished alloy steel. Gear housings are ribbed for extra strength without excessive weight. The Braden-perfected Oil Cooled, Fully Adjustable, Automatic Safety Brake is one of the greatest advances in winch design.

See your nearest Braden dealer for all the great features found only in BRADEN winches.





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Capacities: 10,000 and 12,000 pounds. A heavier series of underslung winches with lower gear ratios for higher speeds.

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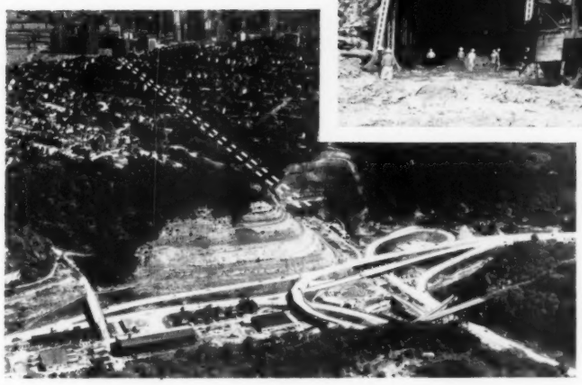


Work on the Fort Pitt Tunnel beneath Duquesne Heights in Pittsburgh is keeping another part of the M-C&S fleet busy. Broken lines show how the tunnel will speed traffic to and from the Golden Triangle area. Inset shows the jumbo drill rig built by M-C&S for fast tunneling.

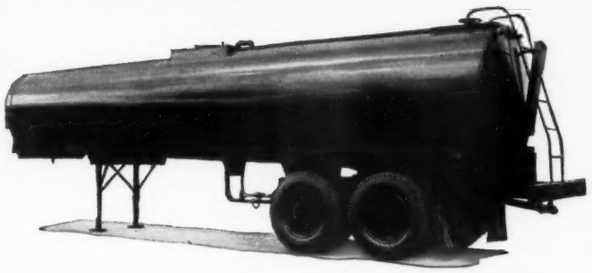
headed by Samuel F. Grattan. Since all equipment is coordinated from this one location, excessive cost-accounting records which might slow up the process of equipment assignments are eliminated.

In this section, files on every piece of equipment are maintained in more than 100 steel cabinet drawers. The original purchase orders and shipping invoices are kept in these files for only the presently owned equipment. When a piece of machinery has been disposed of, the records are stored in a dead file located in one of the company's warehouses.

The heart of the section's activity is a Wheelex filing system which holds a card for every company-owned rig. On each card is such information as the make, size, serial number, monthly rental fee charged to the project, the location of the machine, and the shipping point. Actual maintenance costs are not kept here, but on the project to which the machine is being charged. This eliminates the

(*Continued on next page*)

Standard Steel ASPHALT TRANSPORTS



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CUSTOM DESIGN—Standard Steel Asphalt transports are designed especially for your specific hauling problem. We will be glad to recommend detailed specifications to fit your need.

INSULATING EFFICIENCY—Glass fibre insulation is standard. It will not slip out of place and will not deteriorate due to vibration. It is held in place by wooden spacers which also act as support for the outer shell.

CONICAL OR ELLIPTICAL—Standard asphalt tanks are available in either conical or regular elliptical shapes.

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See Your Dealer or Write for Literature

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OTHER PRODUCTS
Asphalt Pressure Distributors, Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Construction Brooms.

A-157

Standard Steel Works, Inc. NORTH KANSAS CITY, MO

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Efficient design and sturdy construction make Duff-Norton ratchet jacks highly dependable tools for a multitude of uses. They are built to do any sort of moving, lifting or bracing job in mine and mill, or in the field, and will stand up under hard usage with very little maintenance.

Duff-Norton offers nine models of these handy jacks with capacities ranging from 5 to 20 tons. A special safety feature of all models makes it impossible to trip the jacks when under load.

For full information on Duff-Norton ratchet jacks, consult your distributor, or write to the world's oldest and largest manufacturer of lifting jacks asking for our 204-S Catalog.

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P. O. Box 1889 • Pittsburgh 30, Pennsylvania

COFFING HOIST DIVISION • Danville, Illinois

DUFF-NORTON JACKS
Ratchet, Screw,
Hydraulic, Worm Gear

COFFING HOISTS
Ratchet Lever
Hand Chain, Electric

For more facts, use Request Card at page 18 and circle No. 263

The job that "couldn't be done"—construction of the Mackinac Straits bridge—saw M-C&S working on the 34-pier substructure. Three of the company's floating rigs are working here on a 116-foot-outside-diameter steel caisson for a tower pier foundation.

(Continued from preceding page)

need for a project to submit periodic maintenance costs to the home office —something which would only duplicate paper work. It is the responsibility of project managers to care for machines on their jobs and to keep them in top condition throughout a project.

Equipment cards in the New York office are filed according to type so that the section can readily determine how many items of a certain type are on hand and where they are located. This information is important when it comes to filling a project manager's requests for equipment.

A typical request made by a project manager on a new contract contains a list of equipment according to type, size, and number of rigs required, as well as the approximate date they must be on the project.

When the men in the equipment section receive this list, they go through the Wheelex file to locate idle equipment on hand and equipment that will become available from projects nearing completion. This, and such other information as shipping costs, duration of project, and mechanical condition of equipment, is used to make up a list of available machinery.

Sometimes this list has to be supplemented to fill the project manager's request. In supplementing a list, the equipment section has to take other factors into consideration. One of these is the length of time a particular machine will be needed on a job; if a rig is needed for a short time, it might be more economical to rent the equipment. The many items that figure in new equipment purchases are also considered. Many times, too, machinery available from a project nearing completion is not used to fill out the list for a distant project. If another contract has been obtained and is located closer to the equipment, the rig is kept idle a few weeks and sent to the latter job. This saves the cost of shipping the equipment a long distance.

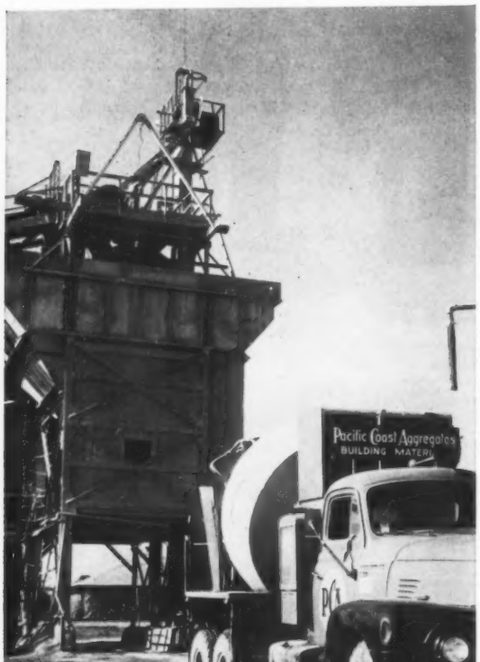
Equipment maintenance

Most of M-C&S' equipment-maintenance operations are performed right in the field. Prefabricated metal buildings, generally set up to house the repair facilities, are supplied with a complete assortment of shop tools for all maintenance work. On smaller projects, the contractor relies on nearby equipment dealers for service to eliminate expensive stocking of spare parts and tools. In some instances, the manufacturer and local dealer set up a complete maintenance system on the job to keep the tremendous fleet of equipment running smoothly. Such is the case at the Glen Canyon project, where International Harvester is providing all the equipment service to M-C&S. This assures the contractor of repair parts and service on the spot and eliminates the need to stock parts.

Overhaul

When a piece of equipment needs a major overhaul at the end of a project, a study is made at the home office to determine whether or not it is more economical than buying a new machine. The machine is first disassembled and a list of replacement parts is submitted to the equipment section. The cost of these replacements is partly determined from up-to-date parts lists. The cost of the parts is

Pacific Cement and Aggregates, Inc. proves:



Pacific Cement and Aggregates has fifteen radio base stations, each handling dispatching from a batch plant. Shown above is the base station at Hayward, California (antenna at top of hopper). They now have 165 mixer trucks and 15 cars and pick-ups equipped with mobile radio.

Fewer trucks per job, less overtime with General Electric two-way radio

General Electric two-way radio means faster, more profitable service. That's why fast-growing Pacific Cement and Aggregates calls it "a valuable tool in selling ready-mixed concrete service to new customers."

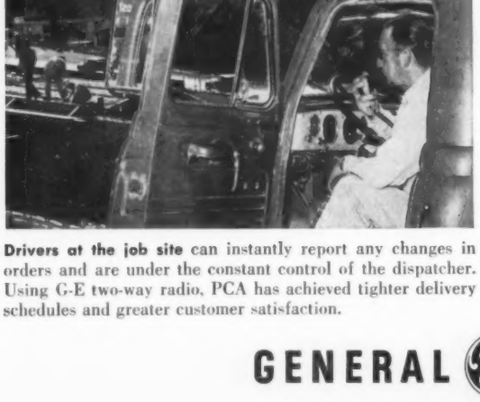
PCA has found that two-way radio cuts down the number of trucks needed on a given job. When faced with unavoidable delays or cancellations, radio permits PCA to switch trucks immediately to other jobs.

Two-way radio lets PCA keep customers up-to-date on job progress. And when customers make corrections on final loads, this information is relayed directly to the job site. Finishing crews do not have to be held on overtime.

If a breakdown takes place, you too can send repair equipment to the exact spot within minutes. Your servicemen, dispatchers and supervisors—tied together by General Electric two-way radio—will have full knowledge of overall operations at all times.

Find out how better communications can give you more profit from present equipment. Call your local General Electric Communications consultant, listed under "Radio Communication Equipment" in the Yellow Pages. Or write: General Electric Co., Communication Products Department, Electronics Park, Syracuse, N. Y.

2-WAY MOBILE RADIO



Drivers at the job site can instantly report any changes in orders and are under the constant control of the dispatcher. Using G-E two-way radio, PCA has achieved tighter delivery schedules and greater customer satisfaction.

Each base station can communicate by radio with adjacent PCA plants, co-ordinating the movements of concrete trucks delivering out of more than one plant, or in those cases where two plants are providing concrete for one job.

GENERAL ELECTRIC

For more facts, use Request Card at page 18 and circle No. 264

M-C&S' $92 million contract on the Priest Rapids Dam project is the third largest let to a single contractor. Jutting into the Columbia River in Washington is the cofferdam area where the first eleven bays of the spillway are under construction.

then combined with the assembly costs for the machine—which are figured at three times the disassembly costs—to provide a very close estimate of the entire overhaul expense. If this figure does not exceed 50 per cent of the machine's present-day replacement value, and the rig will be reconditioned to 85 per cent of its original mechanical efficiency, the major overhaul is generally given the go-ahead signal. If these criteria are not met, a new machine is usually purchased.

Another rule of thumb, developed through years of experience, determines what constitutes a major equipment overhaul. M-C&S considers any maintenance expense amounting to over 10 per cent of the replacement value of the machine a major overhaul.

Equipment procurement

Many factors play an important part in the purchase of new equipment. These include delivery dates, shipping costs, new products and equipment refinements, and, of course, the purchase price. The equipment section has the responsibility of weighing these factors and, after the choice has been made, requisitioning the equipment from the procurement section—the section which actually handles the purchasing. Harry W. Powell, assistant vice president, is in charge of purchasing for the Construction Department.

Merritt's Construction Department, like the company's other divisions and subsidiaries, has decentralized purchasing, with central control on the corporate level. Company-wide procurement is under an executive vice president, Herman B. Block, and total purchases—covering the fields of construction, shipbuilding, chemicals, paints, and metallurgical products—amount to approximately a quarter billion dollars annually. Decentralized purchasing, M-C&S has found, permits the development of specialized buying with resulting economy and efficiency.

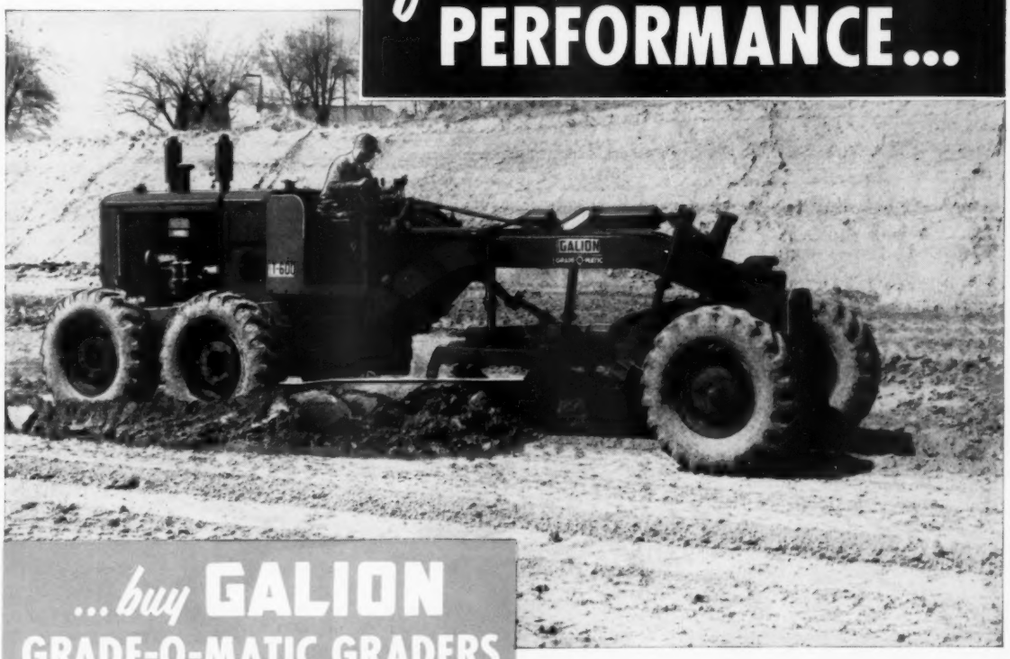
It's interesting to note that an organization the size of Merritt-Chapman & Scott resorts to a rule of thumb in many company operations. This, of course, is only possible when a company has men who know their jobs—men who are specialists with years of training. They have learned by doing, and for those working with construction machinery there is no better teacher.

Representative roster of M-C&S equipment

The major pieces of land and floating equipment owned by Merritt-Chapman & Scott Corp. have a replacement value in excess of $60 million. Maintenance and management of this equipment armada are in the

(Continued on next page)

for TOP PERFORMANCE...



...*buy* GALION GRADE-O-MATIC GRADERS *and profit from these features* -at no extra cost.

- Torque converter drive.
- Power-shift transmission.
- Tail-shaft governor.
- Powerful diesel engines: T-700, 190 hp. T-600, 140 hp. T-500, 125 hp.
- Hydraulic shiftable moldboard.
- Hydraulic booster steering.
- Full hydraulic operation with fingertip controls.
- Same size tires front and rear—interchangeable.

Write for literature.

THE GALION IRON WORKS & MFG. CO.

General and Export Offices—Galion, Ohio, U.S.A.

GALION ESTABLISHED 1907

MOTOR GRADERS & ROLLERS

For more facts, use Request Card at page 18 and circle No. 265

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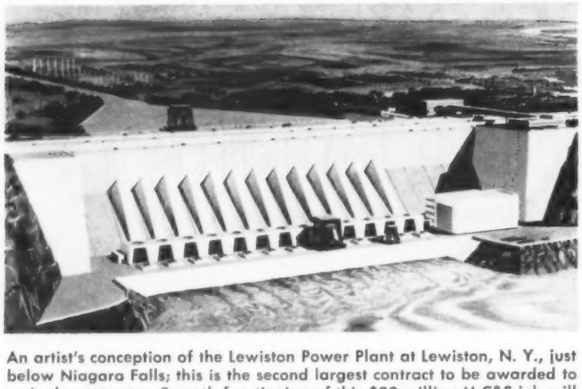


An artist's conception of the Lewiston Power Plant at Lewiston, N. Y., just below Niagara Falls; this is the second largest contract to be awarded to a single contractor. Smooth functioning of this $99 million M-C&S job will depend to a great extent on the work of the firm's equipment section.

hands of a centralized 8-man section. This listing of M-C&S equipment, far from complete, shows representative types of equipment in the inventory.

Land equipment

Air compressors, receivers

71 units, 100 to 2,000-cfm capacity, gas, diesel, or electric drive. 24 receivers, to 150 pounds pressure.

Air tools, accessories

Complete inventory: drills, borers, impact wrenches, jack hammers, paving breakers, spike drivers, spades, tampers, drifters, wagon drills, rivet hammers, chipping hammers, and grinders. A total of 575 tools and accessories.

Automotive equipment

65 heavy earthmoving trucks, 15 to 50-ton capacity; 67 light trucks and passenger cars.

Boilers, hoists, and tanks

46 steam boilers, 30 to 150 horsepower, 150 pounds pressure; 73 hoists, electric, gas, pneumatic, and steam, single and multiple drums; 23 water tanks, steel, to 10,000 gallons.

Cranes, shovels, attachments

73 cranes, 5 to 110-ton capacity, crawler mounted, gas and diesel (Marion, Manitowoc, Bay City, P&H); 3 high gantry revolving cranes, 45-ton capacity; 9 locomotive cranes, 25-ton capacity; 9 motor truck cranes, 15 to 20-ton capacity (Browning, Manitowoc, Lorain); 109 clamshell, orange peel, and dragline buckets, ½ to 6-yard capacity; 80 concrete buckets, 1 to 4-yard capacity; 24 caisson buckets, various capacities; 31 scale box buckets, 4-yard capacity; 19 shovel fronts, dragline fair leads and accessories for above cranes.

Concrete equipment

18 mixers, portable and stationary, ½ to 2-yard capacity; 2 pavers, Model 27E and 34E; 5 bins and batchers, with elevators, 106 to 150-ton capacity (Johnson, Butler); 12 Pumpcrete machines, capacity of 40 to 60 cubic yards per hour; 16 floor hoppers, 1¼ to 2¼-cubic-yard capacity; 10 hoisting towers, 85 to 220 feet, 1 to 2-yard capacity; 2 central crushing and screening plants; plus accessory equipment.

Generators

97 transformers; 27 heavy-duty generating sets.

Pile-driving equipment

53 McKiernan-Terry hammers, Nos. 6 to S14 (S14 has a capacity of 37,500 foot-pounds per blow); 13 Vulcan hammers, Nos. 1, 2, 50-C, and 80-C; 9 pile extractors (McKiernan-Terry, Vulcan); plus accessories.

Pumps

197 dewatering pumps, 2 to 12-inch, gas and electric drive; 10 pneumatic sump pumps; 58 steam pumps, to 18½×10¼×10 inches; 13 portable gas-driven mud hog pumps; 10 Jet pumps, 500 to 1,040 gpm, to 350 pounds pressure.

Rail equipment

6 diesel-electric locomotives, standard gage; 7 railroad cars, standard gage.

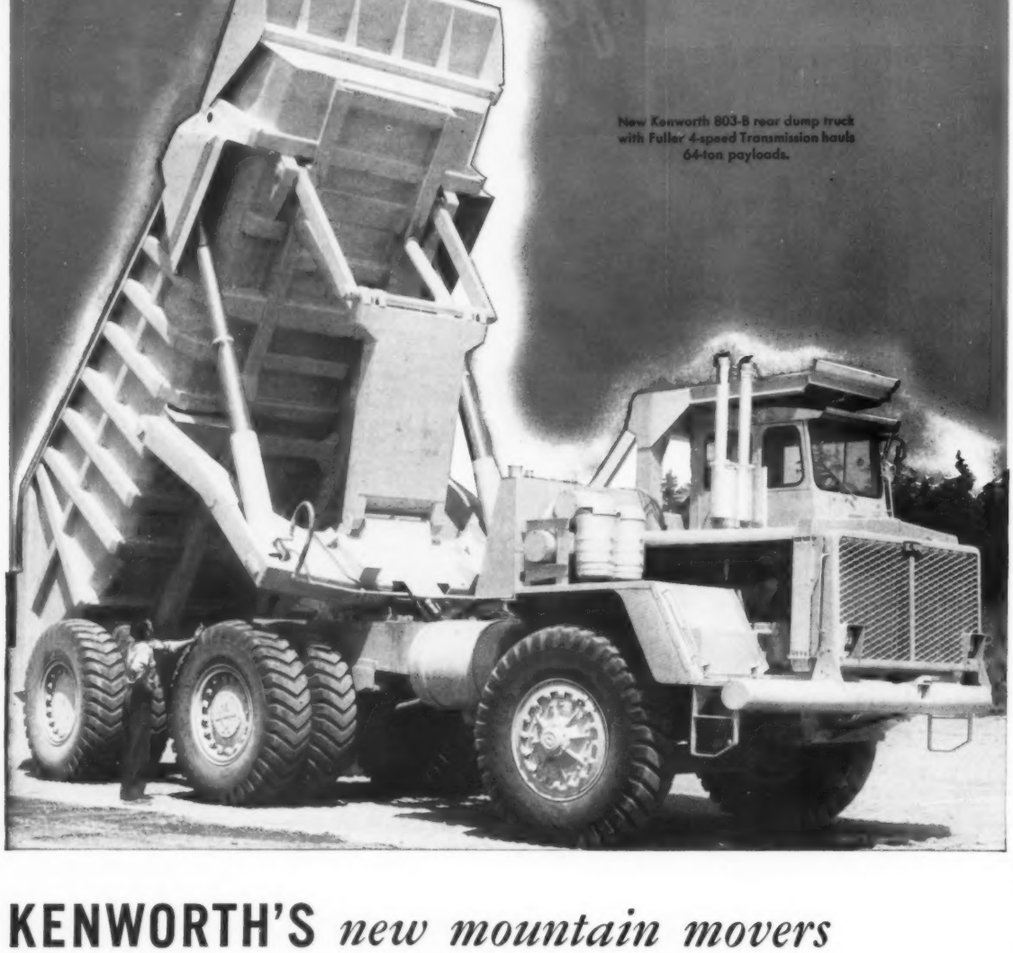
Miscellaneous equipment

20 shop and office trailers, and portable steel buildings; 33 heavy rippers, rollers, scrapers, graders; 28 tractors and bulldozers, 182 welding machines, gas or electric drive, 300 to 400 amp; 131 acetylene and electric cutting outfits, underwater cutting units.

Floating equipment

Whirley derricks

28 units, 25 to 75-ton capacity. Mounted on steel hulls and rigged with booms and jibs ranging up to 170 feet long, the derricks are specially designed for all-purpose use on marine and heavy construction projects, and are equipped with mooring engines, enabling them to anchor and maneuver while working on offshore cofferdams, bridge piers, and other



New Kenworth 803-B rear dump truck with Fuller 4-speed Transmission hauls 64-ton payloads.

KENWORTH'S *new mountain movers feature* FULLER *Transmissions*

Probably the largest rear-dump semi being built today, Kenworth's 42′ 2½″ rock and ore mover is equipped with a Fuller heavy duty 4-speed Transmission.

The 228,000 lb. gvw Kenworth 803-B is designed to haul top payloads profitably over varied terrain. It is powered by a single 12-cylinder diesel engine, offered in either the 400 or 600 hp range. In the 400 hp version, illustrated, a Fuller 4-speed 4-MS-1440 Transmission with CO-11,500 Twin Disc Torque Converter delivers power efficiently and effectively from the powerful Cummins NHV series engine. These heavy-duty Fuller Transmissions provide the right gear ratios to apply the power profitably.

More than 100 different transmission models are available for rubber-tired equipment from 100 to 600 hp, 330 to 1550 cubic inch engines. Check with your truck manufacturer or write Fuller for the right transmission for *your* job.

FULLER TRANSMISSIONS

FULLER MANUFACTURING CO. Transmission Division • Kalamazoo, Mich. Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest. Dist. Office, Tulsa 3, Okla.

For more facts, use Request Card at page 18 and circle No. 266

deep-water projects. They can swing loads and operate over a complete 360-degree circle.

A-frame, bullwheel derricks

21 with 10 to 250-ton capacity; 13 additional A-frame floating derricks from 35 to 250-ton capacity, operated by the Derrick Division.

Floating concrete plants

4 units, 2 to 4-yard mixing capacity. Complete with attendant plant, including 8 covered cement scows with 250 to 400-ton capacity, pneumatic cement conveyors, and elevators. Plants, with capacities from 50 to 100 cubic yards per hour, are rigged with automatic trip hoist towers up to 90 feet high.

Pile drivers

3 barge-mounted, 50 to 80-foot leads; 2 specially designed 125-foot leads for underwater driving.

Workboats

39 tugs, steam and diesel, and workboats, 150 to 1,000 horsepower.

Dredges

4 units, 10-cubic-yard capacity.

Drill boats

2 with 2 drill frames, steam, capable of operating at depths up to 40 feet; 1 with 3 drill frames, steam.

Machine Shops

2 floating machine and carpentry shops, on 34×170×9-foot hull, complete with lathes, welding, and other equipment capable of handling the bulk of project equipment repair and overhaul.

Administrative

Completely equipped floating office, on 34×170×9-foot hull, has office space and facilities for supervisory, engineering, accounting, payroll, and purchasing personnel, and a completely equipped field hospital. Serves as a control center for two-way, short-wave radio network linking all key pieces of M-C&S floating rigs.

Scows

18 dump scows, 300 to 1,500-cubic-yard capacity; 66 steel and wood deck scows up to 50 feet wide and 350 feet long; 8 steel bulk cement carrier scows.

THE END

Concrete, steel design for bridges, buildings

"Composite Construction in Steel and Concrete: for Bridges and Buildings" shows the advantages of designing steel beams and concrete slabs for composite construction, and covers the design procedures and practical applications.

A rapid method for the composite design of beams is detailed and illustrated by six examples. Special problems are covered, such as the determination of the length of cover plates, design of continuous beams, and computation of deflections. Design methods for stud, flexible-channel, and spiral sheer connectors are presented. A section of the book is devoted to the stud shear connector.

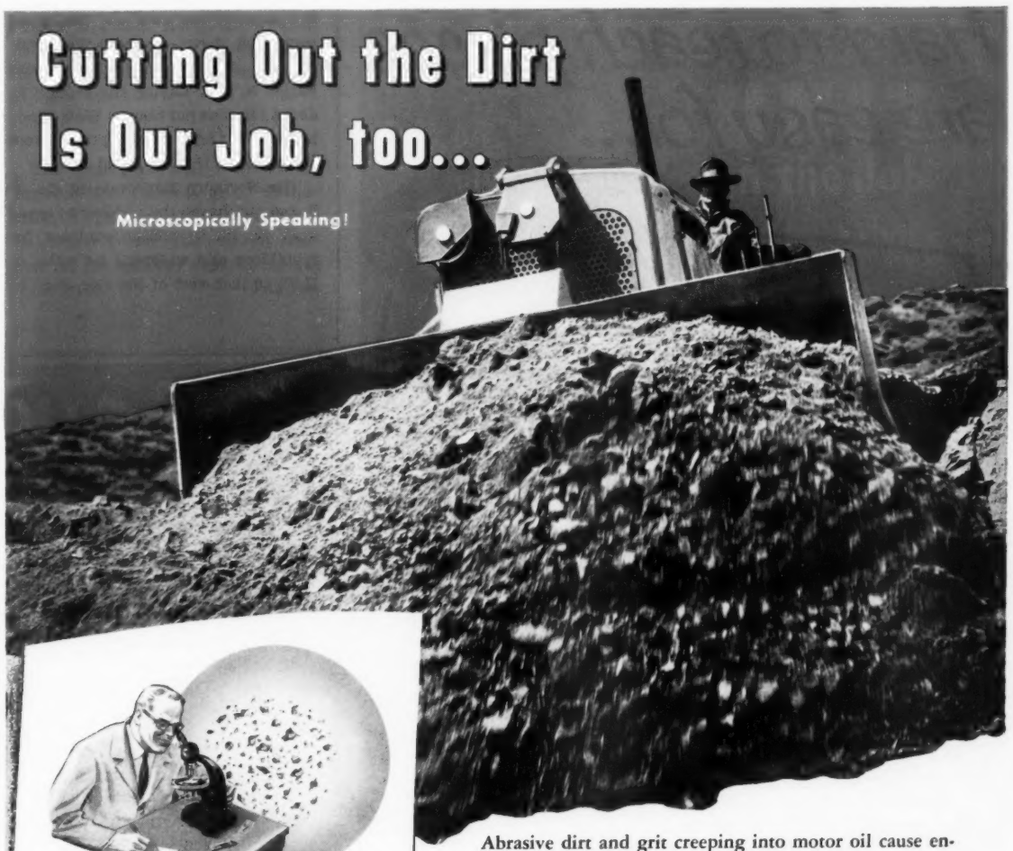
The book, written by Ivan M. Viest, R. S. Fountain, and R. C. Singleton, is priced at $7.50 and may be purchased from McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y.

HRB bulletin reports driver-behavior studies

Highway Research Board's Bulletin 172, "Driver Characteristics and Behavior Studies", is now available from the HRB, 2101 Constitution Ave., Washington, D. C.

The bulletin contains six papers. Four of them report the development of a criterion for driving performance; a factor study of drivers' attitudes; the development of a driving attitude scale; and a community study of the characteristics of drivers and driver behavior as related to accident experience. The last two papers discuss situational characteristics and turn-signaling behavior.

Charts and tables abound in the bulletin, which is priced at $2.40.



Abrasive dirt and grit creeping into motor oil cause engine failures that sideline construction equipment. But, WIX Lube, Air and Fuel Filter Cartridges keep your engines *clean* all the time!—don't give these contaminants a chance to get in their dirty work. Follow the practice of thousands of WIX-wise contractors and install WIX Hevi-Duty Cartridges in ALL *your* filters. It pays off in better, trouble-free lubrication and helps keep your equipment on-the-job.

WIX will make a FREE Filter Survey for you, listing all your engines and showing the correct lube and fuel filter Cartridge replacements you require. Also, deliver a reserve supply of these Cartridges to your local WIX Wholesaler—one near-by source of supply for prompt, COMPLETE Oil Filter Service at *your* job-sites—no heavy inventory for you. Ask your Jobber, or write us direct—TODAY!

℞ *Prescription Filtration*

There's a specific WIX Cartridge engineered for every engine in construction service . . . gasoline or Diesel—mobile or stationary—for lube, air and fuel.

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MURPHY
and ALL OTHER Construction Equipment!

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WIX CORPORATION • GASTONIA, N. C.
In Canada: Wix Corporation Ltd., Toronto

For more facts, use Request Card at page 18 and circle No. 267

The first of three courses of asphalt for a 6-foot-wide shoulder along a stretch of U. S. 10 near Fargo, N. Dak., is laid by a Blaw-Knox Model 95 widener. The widener and the Chevrolet truck which keeps it supplied work on the concrete pavement.

Road widener makes fast work of laying asphalt shoulders

A late model road widener put down hot asphalt—as fast as the plant could turn it out—to build the shoulders of a concrete highway near Fargo, N. Dak. Laying the asphalt at about 140 tons per hour, a Blaw-Knox Model 95 widener built up the 6-foot shoulders in three tapered lifts.

The Northern Improvement Co. of Fargo purchased the widener to speed work on its $1 million contract for rebuilding and widening 3.4 miles of U. S. 10 just west of the city. For the greater part of the stretch, the original 2-lane concrete highway was widened with concrete to make a 4-lane undivided highway. The widened roadway was overlaid with asphalt and bordered with asphalt shoulders. Where the road entered the outskirts of Fargo, the original construction was replaced by a 4-lane concrete undivided highway with asphalt shoulders.

The shoulders were placed on a sand blanket primed with MC-1. The

Hard to reach places are easy for...

the powerful *Viberette*

in prestress work in narrow forms

Hard-to-reach places and narrow stems of prestress T-sections are no longer a problem when the new Viberette Vibrator is on the job. It is designed especially for prestress and narrow form building construction.

The *12,000 rpm speed* and low amplitude of Viberette produces extremely effective vibration in consolidating low slump concrete.

A *small diameter* flexible drive with replaceable rubber tipped head makes it ideal for concrete compaction in constricted areas.

A *powerful,* universal ¾ HP electric motor gives Viberette plenty of "kick" for thorough vibration.

The 19 lb. Viberette Vibrator with new, dual grip, skid type handle makes the entire unit easy for one man to operate. A new shoulder strap attachment leaves both hands of operator free to manipulate the flexible drive.

Features

Interchangeable heads—1", 1-5/16" and 1-3/4" dia.

Flexible drive lengths—1' to 20'

Quick release drive connection

Replaceable rubber or steel tips

Contact your dealer or write direct for detailed information.
Viber Company, 726 South Flower Street
Burbank 28, California

VIBER CO

VIBRATORS

Pioneers and leaders in the manufacture of vibrators.

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ROCKFORD

PATENTED CLUTCH LEVERS •

Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Speed Reducers

• Reduce friction and wear • Improve clutch release action • and Prevent lever throw-out

You get these patented features—in addition to (1) as many as twenty four heat-resistant, non-set springs to assure even pressure all around the plate and long service life (2) nine large side ports and twenty one holes in the cover to carry away heat, dirt, grease and moisture (3) balanced, function-simplified levers to insure efficient operation in high-speed, high-torque engines (4) cushioning and dampening arrangements to minimize shock-load effect and blot out vibration (5) a wide variety of organic, metalic, or Morlife® friction plates. When you specify ROCKFORD you get ALL of these advantages that enable ROCKFORD CLUTCHES to serve better and longer than any "chinese copies".

BW **SEND FOR THIS HANDY BULLETIN** Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

314 Catherine St., Rockford, Ill., U.S.A.

Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 269

Self-propelled widener lays 140 tons per hour in building asphalt shoulders for concrete roadway

8 inches of asphalt butting against the concrete tapered down to 3½ inches in the 6-foot width of the shoulder. The width was extended another foot by a short section that feathered the asphalt from 3½ inches to zero. The 6-foot-wide shoulder was placed in three tapered lifts.

After the Blaw-Knox widener placed the 8-foot-wide sand base to a depth of 3 inches, a distributor primed the surface with MC-1 at a rate of 0.5 gallon per square yard. The Rosco distributor drove on the concrete as it applied the penetrating asphalt with an offset spraybar.

Work on shoulders

In building up the shoulders, the widener drove on the pavement and pushed the dump trucks that kept it supplied with plant-mix. The material dropped from the box of the truck onto a 24-inch conveyor that dumped to the spreader box. Since the conveyor was geared to the speed of the widener, more material was conveyed to the spreader box at higher speeds. The rear plate of the box struck off the asphalt at the proper level.

Hydraulic rams, controlled by the operator, could change the width of the spreader box by 18 inches. Overall widths of from 2 to 10 feet could be gained by inserting sections in the box. Two hand screws controlled the strike-off level.

The widener, powered by a Continental F-226 gasoline engine, was geared to allow five speeds forward and five in reverse. The machine rode on 4 wheels in front and had an 8-wheel tandem rear drive.

The crew generally consisted of only two men—an operator and an extra man to guide the trucks and handle a shovel. After the widener had placed each lift, a Huber 6 to 8-ton tandem roller compacted the hot asphalt.

Personnel

The project manager for Northern Improvement Co. was J. L. McCormick, Jr. The asphalt superintendent was Lester Taylor. The resident engineer for the highway department was C. B. Dahl. THE END

Compaction of each lift is handled by a Huber 6 to 8-ton tandem roller. The shoulder slopes from 8 inches at the roadway to 3½ inches at the edge.

4 in 1

3 in 1

2 in 1

GASOLINE ENGINE DRIVEN WELDER/POWER PLANTS

FIREBALL AMPERAGE RANGES	
METALLIC	INERT GAS
35-100 AC	35-75 AC
65-160 AC	65-160 AC
110-400 AC	150-375 AC
35-80 DC	35-100 DC
75-175 DC	85-225 DC
125-350 DC	170-375 DC

DAH-350 FIREBALL four-in-one model is the only complete unit made to incorporate an ac-dc welder for (1) metallic arc, or (2) tungsten inert gas welding, plus (3) ac power plant, and (4) 1 KW dc power while welding. Twelve separate amperage ranges as shown above. Additional standard equipment features include a polarity switch, either continuous or "start only" high frequency and an automatic inert gas control panel with solenoid valve and postflow timer. Rated output at 100% duty cycle: 250 amps dc tungsten arc; 300 amps ac tungsten arc. Generator: 10 KW of 115/230v, single phase, 60 cycle ac.

DA-300 BIG RIG. Combination ac-dc welder, plus an ac power plant, plus 1 KW of dc power while welding, give this model three-in-one versatility. Generator rated at 10 KW of 115/230v, single phase, 60 cycle ac. Welding ranges in amperes are: (dc) 75-175 or 125-350; (ac) 65-160 or 110-400. Rated output at 100% duty cycle: 250 amps dc at 40 volts and 300 amps ac at 40 volts.

D-250 ROUSTABOUT provides a two-in-one arrangement whereby either of two dc welding current ranges — 75-175 amps or 125-350 amps — and 1 KW of 115v dc auxiliary power are available simultaneously. Rated output is 250 amps at 40 volts, 100% duty cycle. Generator produces 10 KW of 115/230v, single phase, 60 cycle ac.

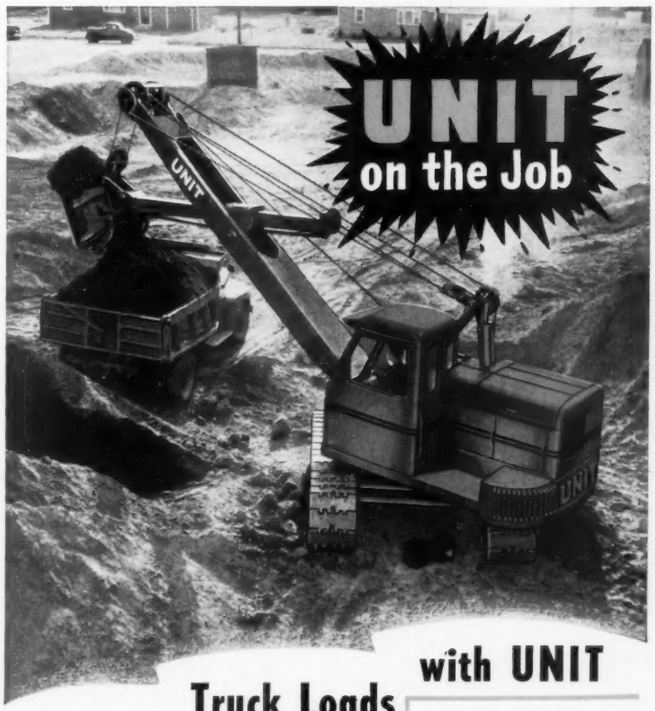
All models offered with skids or trailers. Complete specifications and prices sent promptly.

miller ELECTRIC MANUFACTURING COMPANY, INC.

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal • APPLETON, WISCONSIN

miller WELDERS

For more facts, use Request Card at page 18 and circle No. 270



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Here's a UNIT ¾ yard Shovel that's "in there swinging" . . . making big payloads. UNIT'S balanced stability and power permit hard digging . . . produce maximum yardage at low operating cost. Fewer working parts cut down replacements required . . . reduce maintenance costs. The FULL VISION CAB enables operator to see in ALL directions . . . promotes safety . . . increases efficiency. Results in more loads per day and easier load handling. Get the complete UNIT story. Write for literature.

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6309 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

UNIT

½ or ¾ YARD EXCAVATORS... CRANES UP TO 40 TONS CAPACITY

CRAWLER OR MOBILE MODELS... GASOLINE OR DIESEL

All Models Convertible to ALL Attachments!

For more facts, use Request Card at page 18 and circle No. 271

Convention calendar

August 25–29 National Shade Tree Conference
Conference, George Vanderbilt Hotel and Public Auditorium, Asheville, N. C. L. C. Chadwick, secretary-treasurer, NSTC, Department of Horticulture, Ohio State University, Columbus, Ohio.

September 8–12 Skid Prevention Conference
First International Conference, University of Virginia, Charlottesville, Va. John B. Kinker, director of conferences and short courses, SPC, University of Virginia, Charlottesville, Va.

September 17–18 Building Research Institute
Conference, Sheraton-Park Hotel, Washington, D. C. Harold Horowitz, technical secretary, BRI, National Academy of Sciences, 2101 Constitution Ave., Washington 25, D. C.

September 20–26 American Society of Sanitary Engineering
Annual Meeting, Claridge Hotel, Atlantic City, N. J. James V. Crosta, chairman, ASSE, 68 Fairmount Terrace, East Orange, N. J.

September 21–25 Prestressed Concrete Institute
Fourth Annual Meeting and Convention, Edgewater Beach Hotel, Chicago, Ill. PCI, General Arrangement Committee, Box 391, La Grange, Ill.

September 22–24 Associated General Contractors of America
Mid-Year Board Meeting, Atlanta Biltmore Hotel, Atlanta, Ga. James D. Marshall, executive director, AGC, 20th and E Streets N. W., Washington, D. C.

September 22–24 The Material Handling Institute, Inc.
Fall Meeting, The Greenbrier, White Sulphur Springs, W. Va. Meeting also held with the Industrial Truck Association, Monorail Manufacturers Association, and Association of Lift Truck and Portable Elevator Manufacturers. L. West Shea, managing director, MHI, One Gateway Center, Pittsburgh 22, Pa.

September 29–October 2 New York State County Highway Superintendents Association
Joint Meeting with County and Local Roads Division of American Road Builders' Association, Concord Hotel, Lake Kiamesha, N. Y. H. R. Mason, secretary, NYSCHSA, Fonda, N. Y.

September 30–October 2 Southeastern Association of State Highway Officials
Meeting, Tutwiler Hotel, Birmingham, Ala. A. Reese Harvey, secretary, SASHO, Alabama State Highway Department, Montgomery, Ala.

October 5–8 National Association of Corrosion Engineers
Symposium, Boston, Mass. M. M. Jacobson, NACE, Watertown Arsenal Laboratories, Watertown 72, Mass.

October 7–10 Short Course on Roadside Development
Seventeenth Annual Short Course, Columbus, Ohio. Wilbur J. Gramhausen, chief landscape architect, SCRD, Ohio Department of Highways, Columbus 15, Ohio.

October 15–18 American Bridge, Tunnel and Turnpike Association
Annual Meeting, Hotel John Marshall, Richmond, Va. J. Allyn Stearns, executive secretary, ABTTA, P. O. Box 148, White Plains, N. Y.

October 20–21 National Association of Corrosion Engineers
Annual Conference and Exhibition of South Central Region, Roosevelt Hotel, New Orleans, La. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

October 20–24 National Safety Council
Forty-sixth Safety Congress and Exposition, Conrad Hilton Hotel, Chicago, Ill. R. L. Forney, secretary, NSC, 425 N. Michigan Ave., Chicago 11, Ill.

October 21–22 National Slag Association
Forty-first Annual Meeting, Mayflower Hotel, Washington, D. C. NSA, 613 Perpetual Bldg., Washington 4, D. C.

October 23–24 Virginia Highway Conference
Conference, Virginia Military Institute, Jackson Hall, Lexington, Va. R. P. Ellison, executive assistant, VHC, 1221 E. Broad St., Richmond 19, Va.

October 23–25 National Society of Professional Engineers
Fall Meeting, St. Francis Hotel, San Francisco, Calif. J. A. Sontheimer, secretary, California Society of Professional Engineers, c/o St. Francis Hotel, San Francisco, Calif.

October 26–31 International Road Federation
Third World Meeting, Scop Bldg., Mexico City, Mexico. Robert O. Swain, executive director, IRF, 1023 Washington Bldg., Washington 5, D. C.

October 27–29 National Lubricating Grease Institute
Annual Meeting, Edgewater Beach Hotel, Chicago, Ill. T. W. H. Miller, executive secretary, NLGI, 4638 Nichols Parkway, Kansas City, Mo.

meeting every digging requirement...

Whatever the job...
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Hendrix Dragline Buckets.

"A Type for Every Digging Purpose"...
¼ to 40 Cubic Yards-Perforated or Solid

HENDRIX MANUFACTURING COMPANY, Inc.
MANSFIELD, LOUISIANA
For more facts, use Request Card at page 18 and circle No. 272

Hendrix Lightweight Dragline Buckets

Miller Swivel buys automatic tagline firm

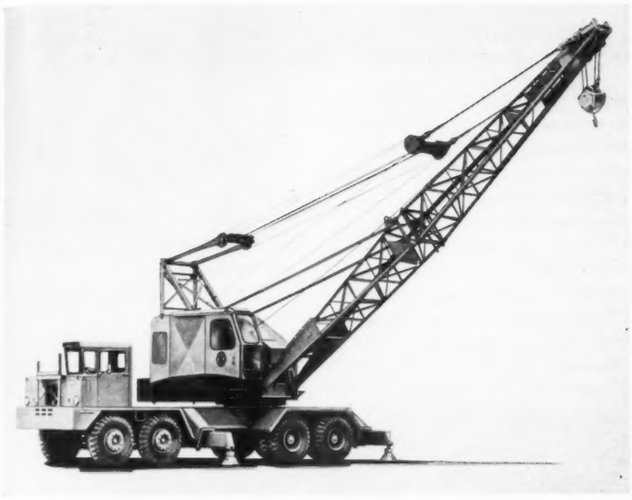
Miller Swivel Products, Inc., Pomona, Calif., has purchased the entire rights, equipment, and production of the Westfall Automatic Tagline Co., formerly located in Los Angeles, Calif. The products will be known as Miller automatic taglines and will be produced in the Pomona plant.

Miller produces high-lift blocks, ball-bearing swivels, headache-ball assemblies, and insulator links. The Miller automatic taglines are available for clamshell buckets in sizes of ⅜ to 2½ cubic yards.

At the same time, Miller Swivel has appointed two factory representatives. Charles W. Sharp, headquartered in Pompano Beach, Fla., covers Florida, Alabama, Georgia, and Mississippi. Paul R. Spencer Co. will serve Colorado, Utah, Kansas, Nebraska, Wyoming, Montana, North and South Dakota, and western Missouri. Spencer's main office is at 4000 York St., Denver, Colo.; a branch is located at 2520 S. State St., Salt Lake City, Utah.

Fruin-Colnon subsidiary joins with British firm

Simon-Carves Ltd., Stockport, England, and Fruin-Colnon International, St. Louis, Mo., have joined forces to deal with design and construction projects in India. The companies will jointly undertake any type of industrial, commercial, and public project.



Truck crane offers 35-ton lifts, speeds to 26.5 mph

Load lifts up to 35 tons with a 40-foot boom, on or off the pavement, reportedly can be made with the new Koehring 435 truck crane. The machine moves from job to job at a top travel speed of 26.5 mph.

Capable of swinging a 120-foot boom, the Model 435 can use boom jibs 15, 20, 25, or 30 feet long when extra reach is necessary. Safety boom limit stops and automatic power boom lowering are standard equipment.

The combination pin-pad connected boom permits two-man boom-length changes. Lugs on the pendant suspended boom allow folding for transportation, even when maximum boom is needed for the job.

Total weight of the truck crane is 89,800 pounds. Removal of the counterweight, pedestals, outriggers, and boom lowers that weight to 62,500 pounds.

For further information write to the Koehring Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 119.

PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

New hydraulic backhoe features 3/8-yard capacity

A new full-swing, all-hydraulic ⅜-cubic-yard-capacity backhoe is announced by the Hydraulic Machinery Co.

The Hy-Hoe reportedly can be mounted on any new or used truck of 2½ tons or larger, single or tandem axle. The machine has a 14-foot digging depth, a 23-foot 3-inch reach, and its loading height with bucket closed is 12 feet 3 inches.

Standard equipment includes the all-weather cab and outriggers.

The Hy-Hoe's swing cycle is said to be 6½ times per minute.

Power is supplied by a Continental Model F-244 gasoline engine developing 69 horsepower at 1,800 rpm, according to the manufacturer.

For further information write to the Hydraulic Machinery Co., Dept. C&E, 3629 W. Elm St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 118.

New portable dredge digs to a depth of 26 feet

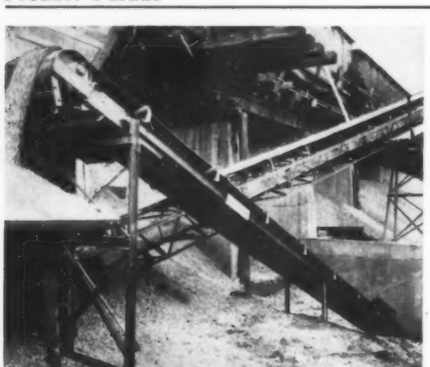
A maximum digging depth of 26 feet is a feature on the Service Machinery Corp.'s new Model CD-10B Dixie-Dredge.

The portable unit's dredge size is 10 feet, and the hull measures 32×18×5 feet. Total dry weight is 64,000 pounds; weight of the center section, 38,000 pounds. The CD-10B has a working draft of 28 inches.

The main engine on this Dixie-Dredge is a Caterpillar Model D-337 diesel; the auxiliary engine is also a Caterpillar diesel, Model 318. Also standard is a cast-steel 5-bladed cutter with replaceable steel teeth.

The unit is said to be easily disassembled for transporting from job to job on two low-bed trailers.

For further information write to the Service Machinery Corp., Dept. C&E, P. O. Box 225, North Miami, Fla., or use the Request Card at page 18. Circle No. 117.



In the foreground is a typical Barber-Greene transfer conveyor, now available in lengths from 9 to 102 feet.

Conveyors now available in lengths up to 102 feet

Barber-Greene Model 375 transfer conveyors are now available in 18, 24, and 30-inch belt widths, and in lengths ranging from 9 to 102 feet, in 1-foot increments.

These conveyors are designed for immediate job installation with a minimum of on-the-job assembly of components. They are equipped throughout with ball-bearing, anti-friction carriers, and return rolls.

According to the manufacturer, each conveyor head end incorporates a compact and efficient drive, and provides an adjustment for length of the unit. Each tail end provides additional adjustment for belt tension by means of heavy Acme thread screws, and is equipped with a built-in loading hopper. Intermediate sections are of sturdy channel-frame construction with heavy decking.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 32.

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DIESEL ENGINES GO RIGHT NOW WITH...

KIM Hotstart electric pre-heater

Just plug KIM into the electric circuit. It draws cold water from the engine, heats it, then circulates it back through the engine. *Result*: quick starts regardless of cold weather; elimination of warm-up time; reduced engine wear and maintenance; responsive power the instant it is wanted. Thousands in use.

Write for literature.

KIM HOTSTART MANUFACTURING COMPANY
West 917 Broadway
Spokane 1, Washington

For more facts, circle No. 274

THE MORSE-STARRETT WIRE ROPE CUTTER

Cutting capacities up to 1 inch, 1-1/16 inch, and 1-1/2 inch.

FAST
Especially designed cutting blade and dies of the finest steel assure fast cutting action.

EASY
Anyone can operate it. The hammer principle eliminates any special skill requirements.

SAFE
The enclosed cutting blade locked in the body of the cutter assures perfect safety.

PORTABLE
Models for tool kit or stationary operation. Made in three sizes.

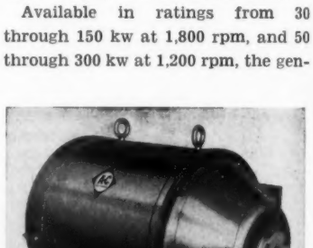
SEE YOUR DEALER OR WRITE TO
MORSE-STARRETT PRODUCTS COMPANY
1204 - 49th AVENUE OAKLAND 1, CALIFORNIA

For more facts, circle No. 275

New, improved generator offers many features

Redesign of its high-speed synchronous generators in single-bearing units for internal combustion engines, close-coupled to standard SAE flanges, or in two-bearing units for belt drives or direct connection has been announced by Allis-Chalmers.

Available in ratings from 30 through 150 kw at 1,800 rpm, and 50 through 300 kw at 1,200 rpm, the generators feature an improved exciter located inboard of the bearing to provide a shorter, lighter, more compact machine.



The units are equipped with oversize grease-lubricated ball bearings, which eliminate the need for oil filters and sight gages. A rigid rolled-steel yoke and cast-iron housings provide a solid bearing support for extended bearing life and protection against mechanical damage.

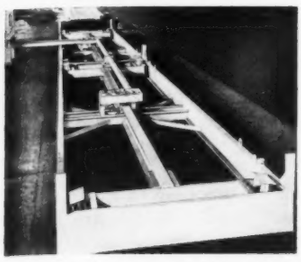
The generators' twelve leads permit a wide choice of voltages. An extra-large conduit box provides ample space for making connections.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 83.

Portable vehicle scale is easily installed

A portable vehicle scale designed especially for weighing materials used in road construction at quarries, gravel pits, and construction sites is available from Fairbanks, Morse & Co.

The scale is a self-contained unit made to be transported on a flat-bed truck. With the wood platform panels removed, the unit is only 8 feet wide



The Fairbanks-Morse portable vehicle scale requires no pit for installation, and is designed to be transported on a flat-bed truck.

—within the legal limit for transporting on a highway. Lifting lugs on the frame are provided for slings for quick loading on a truck. The 40, 50, and 60-foot-length scales are composed of two self-contained units that may be disconnected for greater ease in transporting.

For installation, no pit is required. The scale may be installed on top of the ground by placing footings of concrete or timber at each end and at the center sections to prevent the scale from settling. Earth ramps at each end prevent the scale from moving, eliminating the necessity of foundation bolts.

Scales 20, 25, or 30 feet long may be increased in length by placing another unit in tandem.

For further information write to Fairbanks, Morse & Co., Dept. C&E, 600 S. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 15.

Rotary masonry bits for concrete drilling

A complete line of Cyclo-Core multi-carbide-tipped rotary masonry bits is offered by the New England Carbide Tool Co.

Available in a range of diameters from 1½ to 6 inches, the bits permit drilling of concrete, with or without

reinforcing rods. Features include precision-ground cutting edges, multi-spiral tip-to-shank flutes, removable shanks, and brazed carbide tips. According to the manufacturer, the bits can be resharpened easily. Special "starting centers" permit pinpoint location of holes and prevent walking.

For further information write to the New England Carbide Tool Co., Dept. C&E, 55 Commercial St., Medford, Mass., or use the Request Card at page 18. Circle No. 39.

For more facts, use coupon or circle No. 276→

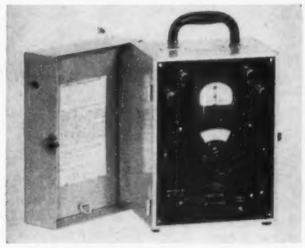
Soils-survey instrument is portable, accurate

An instrument for soil resistivity surveying is announced by Associated Research, Inc.

Designated Model 274M Michimho Vibroground, the unit is offered for use in soils surveys connected with highway grades, foundations, slope designs, borrow sites, and other like applications. It is designed to permit quick and easy determination of type, location, depth, and extent of various soils and rock formations.

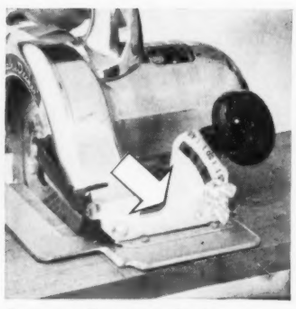
According to the manufacturer, the instrument's features include extreme field portability; simple push-button operation; high accuracy; and rugged construction.

For further information write to Associated Research, Inc., Dept. C&E, 3777 W. Belmont Ave., Chicago 18, Ill., or use the Request Card at page 18. Circle No. 73.



New Black & Decker Super-Service Saws beefed-up to take on your toughest jobs!

NEW RUGGED SHOE DESIGN built to take the abuse of continuous heavy-duty sawing—gives firm footing for improved accuracy!



IMPROVED BRACKETS give increased quadrant setting accuracy; less variation on angle of saw blade to shoe surface; greater accuracy of cut.

PICTURE WINDOW in housing gives you top visibility. New air flow blows sawdust clear of job, clear of your eyes!

NEW POWER—cooler running B&D - built motors custom engineered for tough sawing jobs, continuous operation.

B&D Super-Service Saws bring new accuracy, new convenience to your work

On-the-job tests prove B&D Saws outcut, outperform, outlast other builder saws—with power to spare! Now, Black & Decker brings you a new, even more rugged series of saws built to stand the toughest gaff!

You'll find greater accuracy, a new guard retractor lever, better visibility—features you'll really appreciate when you see them. Available in 6½", 7¼", 8", and 9¼" sizes—each complete with carrying case and rip fence. Mail coupon for a free demonstration or additional information. THE BLACK & DECKER MFG. CO., Dept. 1308, Towson 4, Md. (In Canada: Brockville, Ontario.)

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Black & Decker®

Quality Electric Tools . . . Power-built for top performance

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☐ Please arrange a demonstration of your Super Service Saws.

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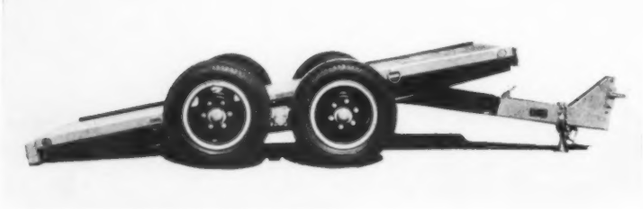

The Miller Model CT's tandem-axle suspension spreads the gross trailer weight over a larger area to permit maximum tonnage to be carried without violating axle-load-limit laws.

Tandem-axle tilt-top allows greater payload

The Miller Tilt-Top Trailer Co. announces its Model CT 7-ton tandem-axle tilting trailer.

The unit's tandem-axle suspension system, combined with between-the-wheels platform construction, reportedly permits fast, easy low-angle loading plus greater payload capacity. In addition, straight line trailing and extra stability on turns is made possible by the CT-7's extra-low center of gravity.

Like all Miller tilt-tops, the company states, this model enables one man to tilt, load, and be on his way to the next job in a matter of minutes. To reduce jarring over rough terrain, tandem suspension is combined with oscillating walking beams, permitting each set of wheels to rise and fall independently.

The CT-7 platform is constructed of 2-inch-thick oak, measuring 76 inches between the wheels and a full 14 feet long. A 16-foot platform is also available.

For further information write to the Miller Tilt-Top Trailer Co., Dept., C&E, 450 S. 92nd St., Milwaukee 14, Wis., or use the Request Card at page 18. Circle No. 50.

Versatile rotary hammer is lightweight unit

A new series of portable rotary hammers is announced by the Demo-Haines Tool Corp. Available in air, gas, and electric-powered models, the units are said to be about two-thirds the weight of conventional hammers of equal performance ratings.

Utilizing a rotary shock-wave principle, the hammers are built for vertical, horizontal, or overhead drilling. They are capable of producing long or short holes of ½-inch through 8-inch diameter, according to the manufacturer.

For further information write to the Demo-Haines Tool Corp., Dept. DH-186, Dept. C&E, 2151 E. Rosecrans Ave., El Segundo, Calif., or use the Request Card at page 18. Circle No. 54.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

Anchor bolt cement sets in 20 minutes

A new extra-hard cement said to set anchor bolts in 20 minutes is announced by the National Asphalt Corp.

Designated Nacor anchor bolt cement, it consists of a light gray powder which mixes readily with water to form a semifluid, easily poured, compound.

According to the manufacturer, anchor bolts cemented with Nacor can be drawn tight, and ordinary equipment put in operation within a half hour.

For further information write to the National Asphalt Corp., Dept. C&E, Bulkley Bldg., Cleveland 15, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 43.

A-W Super 99 equipped with Torquematic Drive working in deep mud near Norfolk, Va. Machine is owned by Williams Paving Co., and is operated by Golden Barber.

"The Austin-Western works where th

"The Austin-Western's all-wheel drive and all-wheel steer give it a big advantage over other graders," says Ed. Williams, v-p of Williams Paving Co., Norfolk, Va. "With its extra traction and maneuverability, the A-W works where other graders can't go. It is especially good for grading steep slopes and for getting in and out of tight places—for example, working around the stakes during last-stage grading.

"Another feature that makes the A-W a superior machine is its ease of operation. I am an operator myself, and I appreciate the quick, positive action of the hydraulic controls. Furthermore, as an owner, I like A-W's low operation and maintenance costs."

Some big A-W features. One of the reasons the A-W outperforms ordinary graders is extreme blade reach. From any normal operating position, you can extend the blade hydraulically into position to handle almost any type of job. Precision sideshift and circle sideshift give you unusual reach and by using all-wheel steer to offset the rear truck, you can obtain several extra feet of sideshift more than with competitive types. And all-wheel drive keeps the power of the grader balanced against the load, regardless of blade position, for added efficiency.

With an A-W, you can do precise finishing operations never before possible with a motor grader, quickly and

Twenty thousand square feet of film made from Bakelite polyethylene resin cover the sides of a Seattle sewer cave-in, as conveyors work to fill the 200-foot-long, 100-foot-deep crater. The plastic film kept the sides dry during a heavy downpour, and prevented erosion and undercutting of pit edges and sides. For further information about this film, write to the **Visking Co.**, Division of Union Carbide Corp., Dept. C&E, P. O. Box 1410, Terre Haute, Ind., or use the Request Card at page 18. Circle No. 179.

Pendant clevis speeds crane boom connection

A clevis fitting designed for fast, safe pendant connection on crane booms is offered by the Crosby-Laughlin Division of the American Hoist & Derrick Co.

Called the boom pendant clevis, it is installed by placing it through one thimble and joining it, with a pin, to a solid thimble on the next pendant section. This lightweight connection reduces pendant vibration and rope flexing, resulting in safer operation and fewer pendant replacements, according to the manufacturer.

For further information write to the Crosby-Laughlin Division, American Hoist & Derrick Co., Dept. C&E, Box 570, Fort Wayne, Ind., or use the Request Card at page 18. Circle No. 74.

Announce conversion kit for two-way radiophones

Simple conversion kits, that will adapt any Motorola mobile two-way radiophone sold since 1949 to full split-channel operation, are available from the company.

Estimated conversion time for an average technician is a maximum of 20 minutes for any Motorola mobile or base-station model. Only a minimum of test equipment and shop facilities is required.

For further information write to Motorola, Inc., Communications and Industrial Electronics Division, Dept. C&E, 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 135.

Salt-tablet dispenser offered in two sizes

A salt-tablet dispenser is offered in 500 and 1,000-tablet sizes by the Medical Supply Co.

Made of transparent plastic, the new dispenser not only reduces the waste of moisture deterioration, but allows a simple visual check on the tablet supply. Simply worded instructions tell workers how to use Controlled-Action tablets without worry about stomach upset.

For further information write to the Medical Supply Co., Dept. C&E, 1027 W. State St., Rockford, Ill., or use the Request Card at page 18. Circle No. 28.

erother graders can't go" says Ed. Williams, Williams Paving Co.

hift and ily. Extra wide shoulders, as well up from the bottom or down from get the full story on Austin-Western
ual reach slopes of any kind, can be accu- the top with equal ease. today. Your nearby A-W distributor
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Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes
Fore more facts, use Request Card at page 18 and circle No. 277

Sand and gravel bucket raises carry-out capacity

A new line of automatic dragline buckets designed specifically for sand, gravel, and quarrying work is announced by the Page Engineering Co. The new design features a longer and higher basket, said to carry out more payload on every swing.

According to the manufacturer, the buckets are especially useful in underwater digging.

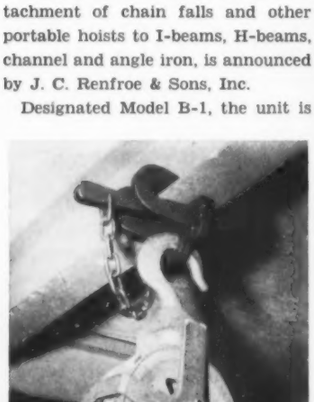
Constructed of USS T-1 steel, they are available with or without perforations, in sizes from ½ cubic yard and up.

For further information write to the Page Engineering Co., Dept. C&E, Clearing Post Office, Chicago 38, Ill., or use the Request Card at page 18. Circle No. 22.

Overhead beam clamp for portable hoists

A portable beam clamp for the attachment of chain falls and other portable hoists to I-beams, H-beams, channel and angle iron, is announced by J. C. Renfroe & Sons, Inc.

Designated Model B-1, the unit is



Renfroe's Model B-1 beam clamp.

available for flange sizes from 1½ inches to 14 inches, and in capacities from 1 to 10 tons. According to the manufacturer, it can be placed on a beam and be locked in position in less than one minute and dismantled as quickly.

For further information write to J. C. Renfroe & Sons, Inc., Dept. C&E, 1259 W. State St., Jacksonville, Fla., or use the Request Card at page 18. Circle No. 69.

Concrete paving form locks without hammering

An improved highway-airport concrete paving form with a circular, sliding lock, said to eliminate sledging and provide a more rigid joint between rails, is announced by the Super Form Co.

According to the manufacturer, the greater rigidity provided by the lock also prevents sagging and distortion under heavy paving machines, thus assuring a more accurate finish.

Designated Joy Stick, the locking device is of simple design. Heavy sleeves are welded into the ¼-inch triangular plates which brace the ends of the forms. By placing an ordinary form stake in the welded socket, and levering forward, the snug-fitting lock pipe is instantly slid into locking position.

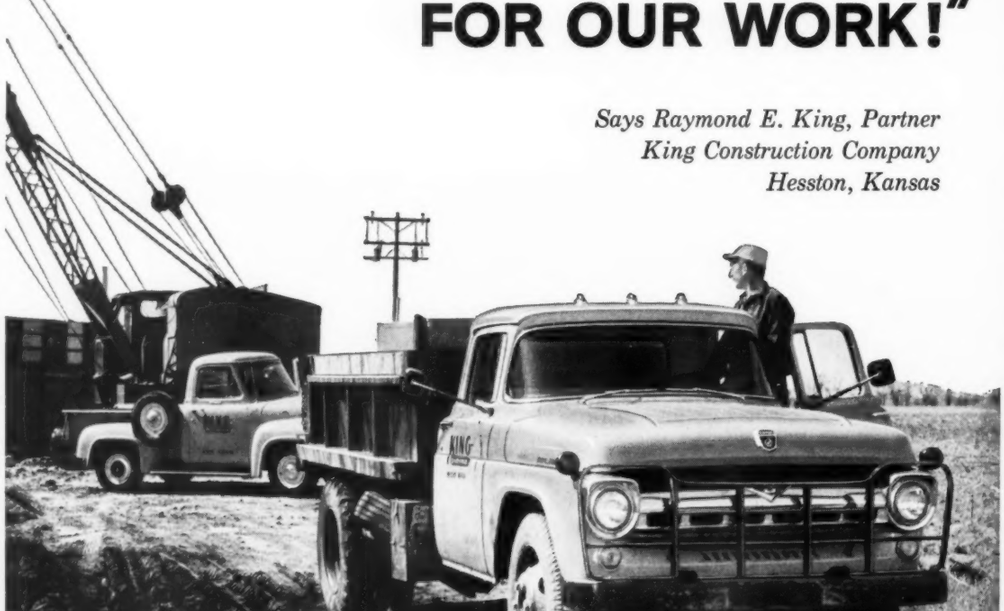
Box-type, groutproof stake pockets are welded to the form's channel supports for accurate vertical stake driving.

For further information write to the Super Form Co., Dept. C&E, 16 E. Board St., Columbus, Ohio, or use the card at page 18. Circle No. 41.

◄

"YOU CAN'T BEAT FORD'S TRANSMATIC DRIVE FOR OUR WORK!"

Says Raymond E. King, Partner
King Construction Company
Hesston, Kansas



"For off-the-road work and hauling out of sand and gravel pits our Ford two-tonner with fully automatic transmission sure handles the loads

"We've put 42,000 miles on our F-600 dump in the last 9 months and are very satisfied with it. Gas mileage is good and tire wear is reduced. Another big advantage of Transmatic Drive is that you don't tear up axles coming out of sand pits. Also, its torque converter multiplies engine torque to get loads started and prevents harmful engine lugging. To do our job with a truck not equipped with Transmatic Drive would mean buying a truck at least one size larger."

Finance the easy one-stop way!
Ask about the new
FORD FLEET TRUCK FINANCE PLAN!

Equipped with Dualoc front-drive axle, this Ford Model 800 tractor with front-end loader demonstrated increased efficiency in a recent field test. Power-dividing differentials in the Dualoc axle automatically shift torque between the front wheels, giving the wheel with the best traction more power. The device is said to have no adverse effect on steering, and may be easily disengaged by means of a convenient shift lever when the machine is operating over the highway. The attachment is installed in a matter of a few hours with only a few bolts, and is said to double the tractive power of a tractor by providing four driving wheels for work on rough terrain. For further information about Dualoc front-drive axles write to **Dualoc Drive, Inc.,** Dept. C&E, 700 20th St., Rockford, Ill., or use the Request Card at page 18. Circle No. 120.

Bring extra savings to your business . . . make your next truck a FORD!

Official registrations for 1957 show that *American business buys more Ford trucks than any other make.* There are many reasons for this popularity . . . many reasons for *you* to make your next truck a Ford!

To begin with, Ford offers a complete line of over 360 truck models, ranging from pickups to giant tandems. And there are Ford Dealers almost everywhere, ready to help you select the truck best suited for your individual job. They're ready with modern service facilities, trained mechanics and low-priced Ford parts to keep your trucks on the job, earning for you.

Ford trucks are your best buy! Ford's initial costs are *low* and resale value is traditionally high. The modern Ford Styleside pickups are the lowest-priced models available with full cab-wide body . . . giving you 23% more loadspace than any traditional pickup box.

Value-packed Ford Tilt Cab trucks offer exceptional payloads, maneuverability, service accessibility and driving ease. They're America's most popular tilt-cab line *by over two to one!*

Only Ford offers the economy of Short Stroke power in all engines, Six or V-8. And Ford's Heavy Duty V-8's offer new, advanced durability features. The modern Ford Six, available in Light and Medium Duty F- and P-Series trucks, is equipped with an economy carburetor that gives you up to 10% greater gas mileage. It's plenty peppy, too, with more horsepower per cubic inch than any other six in its class.

Ford's rugged cab and chassis construction means these new '58s are built to last. Every Ford has safety glass in every window. All this plus proof that Ford trucks last longer adds up to America's No. 1 truck value.

See your local Ford Dealer for the latest in '58 trucks or the best in A-1 used trucks.

King Construction Company's Ford F-600 with 178-hp Heavy Duty V-8 engine is an all-around performer. Transmatic Drive enables driver to easily back truck into position.

Carrying 5 to 6 yards of sand or rock, this Ford dump truck hauls many loads daily from nearby production sites.

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

For more facts, use Request Card at page 18 and circle No. 278

Concrete-cylinder tester has 100-ton capacity

A new portable concrete-testing machine is announced by Soiltest, Inc. The unit is said to make possible rapid on-the-job testing of concrete cylinders up to a total applied load of 200,000 pounds.

The tester is entirely self-contained, with no electrical or pressure connections required. Loads are developed by a hand-operated pump which actuates the piston of the main hydraulic system.

Standard 6-inch-diameter and 12-inch-long concrete cylinders can be tested, and the swiveled upper platen is adjustable to allow for variations in specimen height.

The machine weighs 400 pounds, and all parts are designed for easy transport and maintenance.

For further information write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 51.

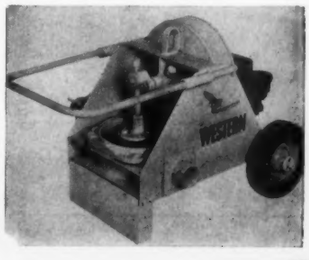
Diaphragm pump handles up to 50 per cent solids

The Western Equipment Division of the Douglas Motors Corp. announces a new 2-inch diaphragm pump.

This lightweight self-priming unit reportedly will handle up to 50 per cent solid material without clogging or damage.

Both suction and discharge openings are provided with a 2-inch internal thread and 2½-inch external thread.

For further information write to the Western Equipment Division, Douglas Motors Corp., Dept. C&E, 1234 N. 62nd St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 46 .



The clamshell attachment for the Pettibone Mulliken Swing Loader is available in bucket widths of 18, 24, 30, 36, and 60 inches for a variety of applications.

New clamshell attachment announced for loader

The Pettibone Mulliken Corp. announces a new clamshell attachment, with five different bucket widths, for its Speed Swing loader.

The maximum dumping height of the clamshell attachment is 9 feet; maximum digging depth, 10 feet. Buckets for digging rock and dirt are available in 18 and 24-inch widths; for lighter materials, 30 and 36-inch; for snow, 60-inch.

The Pettibone Speed Swing offers a 180-degree free swing of the boom—90 degrees right and left. The unit with clamshell attachment is readily converted back to a bucket loader or fitted with other attachments.

For further information write to the Pettibone Mulliken Corp., Dept. C&E, 4700 W. Division St., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 62.

Profit-Paying
WAUKESHA
POWER
FOR CRANES AND SHOVELS

HANSON QUALITY HSDM
CLARK EQUIPMENT
"QUICK-WAY"
THEW Lorain
UNIT
Manitowoc
MICHIGAN
GarWood
LINK-BELT SPEEDER
KOEHRING HEAVY DUTY
INSLEY
BAY CITY
ORTON Torque-Control
AMERICAN HOIST
LIMA
MARION

WAUKESHA 135 DIESEL
Torque Converter Package—
4¼ x 5-in., 426 cu. in.

•

WAUKESHA VLRDBSU
V-12 Turbo-Supercharged DIESEL
8½ x 8½-in., 5788 cu. in.

Complete size range to 1235 hp
. . . all standard fuels.

387

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES

For more facts, use Request Card at page 18 and circle No. 279

New oscillating roller compacts shoulder slopes

The new Ferguson RT-1100 oscillating roller compacts on slopes as great as 2 to 1.

An 11-wheel, towed-type rubber-tire roller featuring specially designed wheel oscillation for complete coverage of shoulder slopes is offered by the Shovel Supply Co.

This latest addition to the Ferguson line of compaction rollers is designated the Model RT-1100. Empty, the roller weighs 3,630 pounds; fully ballasted, it exerts a ground pressure of 306 pounds per inch of tire width. Timken tapered roller bearings with dust-proof seals are used in all wheels to assure long trouble-free service, according to the company.

Especially recommended for shoulder slope work, the roller is said to give maximum compaction coverage on slopes as great as 2 to 1.

For further information write to the Shovel Supply Co., Dept. C&E, P. O. Box 1369, Dallas 21, Texas, or use the Request Card at page 18. Circle No. 61.

DEPENDABLE
SOIL SAMPLING
EQUIPMENT
IS NO PROBLEM
FOR THIS
DRILL CREW

With a contract to obtain representative samples of the soil strata along the center line of an important link on the new Interstate Highway System, this contractor is using the S&H Split Barrel Sampler for recovering samples in this immediate area. At the next location, sampling for a bridge foundation, the S&H Shelby Tube Sampler will be utilized to recover the undisturbed samples that are necessary.

Sprague & Henwood's sampling equipment is designed for long, dependable service with a resulting minimum cost. The complete line of sampling devices and equipment is described in the new Bulletin 300.

SPRAGUE & HENWOOD, Inc.
SCRANTON 2, PA.
MEMBER OF: DIAMOND CORE DRILL MANUFACTURERS ASSOC.
New York — Philadelphia — Atlanta — Pittsburgh — Grand Junction, Colo. — Buchans, N.F.
EXPORT REP.: PHILIPS EXPORT CO., 100 EAST 42ND ST., N.Y. 17, N.Y. CABLE ADDRESS: PHILYORK

For more facts, use Request Card at page 18 and circle No. 280

One of Diamond T's new line of trucks for ready-mix service, this Model 730-32M features a combined axle capacity of 49,000 pounds.

Announce trucks designed for ready-mix service

Trucks designed specifically for ready-mix service are available from the Diamond T Motor Truck Co.

These heavy-duty six-wheelers feature a front-mounted power take-off rated at 50 horsepower at 2,100 rpm. Power to turn the drum is transmitted through a drive shaft extending from the truck engine's crankshaft. The frame and bumper of the truck have been extended 11 inches forward to accommodate the installation.

According to the manufacturer, the takeoff can easily be engaged or disengaged by means of a clutch in the cab.

For further information write to the Diamond T Motor Truck Co., Dept. C&E, 4401 W. 26th St., Chicago, Ill., or use the Request Card at page 18. Circle No. 35.

Kit converts hoist hooks to safety-type units

Converting Crosby-Laughlin hoist hooks to safety hooks can now be accomplished in minutes, simply by adding a latch kit to the drilled cam integrally forged above the hook throat.

Loads, the company points out, cannot slip or be jarred off a hook with safety latch installed.

Kits consisting of latch, spring bolt, and self-locking nut are available to match every size of Crosby-Laughlin eye and shank hooks.

For further information write to the Crosby-Laughlin Division, American Hoist & Derrick Co., Dept. C&E, Box 570-FY, Fort Wayne, Ind., or use the Request Card at page 18. Circle No. 72.

Aluminum safety cap is tough yet lightweight

A vertically taper-ribbed aluminum safety cap, designated SuperLite, is available from The Fibre-Metal Products Co. Although light in weight, its design is said to have maximum impact resistance and deflection characteristics.

The SuperLite cap's "suspension" is of shock-absorbing and form-fitting polyethylene. The suspension "floats" the headband to avoid direct head contact with the cap shell, and for full ventilation.

According to the manufacturer, only the headband with its sweatband needs to be replaced. It adjusts from size 6⅝ to 8.

For further information write to The Fibre-Metal Products Co., Dept. C&E, Fifth and Tilghman Streets, Chester, Pa., or use the Request Card at page 18. Circle No. 49.

Need HOSE in a *HURRY?*

Suction • Water • Steam
Air • Multi-Purpose
Discharge • Pile Driver

Wherever your job is—*whenever* you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—*when* and *where* you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

ATLANTA 5, Ga. 477 Eighth St., N.E.
BALTIMORE 18, Md. 15 East 21st St.
BOSTON (Alls. 34), Mass. 12 Franklin St.
CHICAGO 10, Ill. 10 West Hubbard St.
CINCINNATI 2, Ohio 49 Central Ave.
CLEVELAND 15, Ohio 2731 Prospect Ave.
DETROIT 27, Mich. 13801 Schoolcraft Ave.
INDIANAPOLIS 4, Ind. 309 North Capitol Ave.
MEMPHIS 3, Tenn. 268 Madison Ave.
NEW YORK 7, N. Y. 81 Murray St.
PHILADELPHIA 6, Pa. 311 North Randolph St.
ST. LOUIS 8, Mo. 4018 Olive St.
SYRACUSE 3, N. Y. 739 Montgomery St.

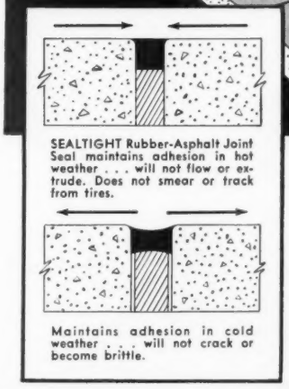
Continental Crush-Proof Suction and Discharge Hose—reinforced with top grade duck plies and springy Stycon rubber cord that *brings hose back to shape if flattened.* Needs no wire. Corrugations allow *greater bends without buckling.* Tough rubber cover and tube, smooth bore. Used for discharge up to 150 p.s.i. Sizes: 1½", 2", 2½", 3". Ask for HOSE and CLOTHING catalog.

HOSE by CR
CONTINENTAL

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 281

JOINTS MAINTAIN THEIR SEAL UNDER ALL WEATHER CONDITIONS WITH...



SEALTIGHT Rubber-Asphalt Joint Seal maintains adhesion in hot weather . . . will not flow or extrude. Does not smear or track from tires.

Maintains adhesion in cold weather . . . will not crack or become brittle.

SEALTIGHT rubberized-asphalt compounds provide the ideal sealer for years of economical, trouble-free joints in concrete construction. They feature high resilient and adhesive properties and are able to maintain a bond at below zero temperatures. Will provide a positive seal in all types of monolithic construction. Designed for use with non-extruding type fibre expansion joints.

SEALTIGHT®

PRODUCTS

- EXPANSION JOINTS . . . Asphalt, Fibre, Cork and Sponge Rubber.
- TONGUE and GROOVE Center Strip.
- Hot and Cold Rubber Asphalt Joint Seal.
- Hot and Cold JFR Rubber Asphalt Joint Seal.
- Air Entraining Agents.
- Curing Compounds.
- Curb and Gutter Sections.
- "PREMOULDED MEMBRANE" Vapor Seal.
- "DURAJOINT" PVC Waterstops.
- "HYDROMAT" Asphalt Liners.

SEALTIGHT®

RUBBER-ASPHALT JOINT SEAL

RUBBER-ASPHALT JOINT SEAL compound available in both hot-pour and cold-applied types. SEALTIGHT Hot-Pour Rubber-Asphalt meets Federal Specifications SS-S-164 and CAA Specification P-605 . . . SEALTIGHT Cold-Applied Rubber-Asphalt meets Federal Specification SS-S-159 and CAA Specification P-615. Both are ideal for use in the joints of concrete streets, highways, bridges, etc.

JFR RUBBER-ASPHALT JOINT SEAL is recommended for sealing concrete runways where resistance to jet fuel is necessary. Available in Hot-Pour Type to meet Federal Specification SS-S-00167 and Cold-Applied Type that meets Federal Specification SS-S-00170. Easy and economical to apply.

TONGUE AND GROOVE Joint, used primarily as a longitudinal joint, provides a "keyed joint" that assures maximum efficiency in load transmission . . . helps to prevent blow-ups, spalling and controls cracking. Completely waterproof . . . produced from asphalt hardboard . . . is rigid, easy to handle and install, will not extrude. More economical and safer than steel center strips and will not rust away. Approved by Federal, State and Local engineering authorities.

EXPANSION JOINTS specifically designed to meet the needs of modern, properly-designed, properly-jointed construction projects. All types including Asphalt, Fibre, Sponge Rubber, Standard Cork, and Self-Expanding Cork joints available from "stock" at your local SEALTIGHT distributor. Meet Federal and State specifications.

Write today for complete information on the above products plus information about the many other top-quality SEALTIGHT products for highway construction . . . ask for the "PAVING PRODUCTS" Catalog.

W. R. MEADOWS, INC.

13 KIMBALL ST. • ELGIN, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 282

A maximum 200-degree continuous arc of swing is a major feature on the Henry Mark III backhoe. The unit also features a 12½-foot digging depth and a loading height of 8½ feet.

Backhoe for crawlers offers 200-degree swing

A new backhoe for crawler tractors is announced by the Henry Mfg. Co., Inc. Designated Mark III, the machine utilizes a new type of hydraulic swing cylinder giving a maximum continuous arc of swing of 200 degrees.

According to the manufacturer, the Mark III mounts close to the rear of the crawler tractor with a quickly detachable mounting. It reportedly digs to a maximum of 12 feet 6 inches, and has a loading height of 8 feet 6 inches. The unit has two individually controlled hydraulic outriggers with a span of 9 feet 8 inches.

Twelve bucket sizes are available, ranging in width from 12 to 38 inches. Mole's-paw buckets and a pipe-pusher attachment are also offered.

For further information write to the Henry Mfg. Co., Inc., Dept. C&E, P. O. Box 521, Topeka, Kans., or use the Request Card at page 18. Circle No. 48.

Lightweight vibrator changes drives fast

A lightweight, one-man concrete vibrator is available from the White Mfg. Co.

Designated the Lightning vibrator, the 25-pound unit features a motor that delivers its full ¾ horsepower to the vibrator head even at the end of a 24-foot drive shaft.

A variety of drives (or combination of drives) and heads can be attached to the vibrator in a matter of seconds without the use of adapters, according to the company.

For further information write to the White Mfg. Co., Dept. C&E, 1227 W. Beardsley Ave., Elkhart, Ind., or use the Request Card at page 18. Circle No. 42.

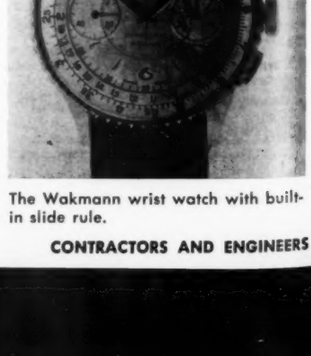
Watch features built-in circular slide rule

A wrist watch with a built-in circular slide rule is offered by the Wakmann Watch Co., Inc.

Designated Chronomat, the watch's slide-rule feature performs such calculations as multiplication, division, ratio, conversion, percentages, and many others.

The unit has an all-steel case, 17-jewel movement, 60-second and 45-minute registers, and raised silver figures on the dial for easy reading. It is also available in a solid gold case.

For further information write to the Wakmann Watch Co., Inc., Dept. C&E, 15 W. 47th St., New York 36, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 71.



The Wakmann wrist watch with built-in slide rule.

There'll be new construction here . . .

WILL YOU KNOW ABOUT IT IN TIME?

This could be right in your area. In that case, you'd want to know: What's going to be built • Its exact location • Who's going to design and build it • When the bids will be due • Who's bidding.

Dodge Reports are the surest way to get regular, up-to-date answers to questions like these. They provide you a way to locate and carefully select jobs, to pin down contracts and lift up profits.

With Dodge Reports, you don't spend time chasing down rumors. You don't spend time making fruitless solicitations. You concentrate on active business – all active business. Dodge Reports insure that you won't overlook many a profitable business opportunity – even from a source you rarely contact.

Dodge Reports cover every local market in the 37 Eastern states. To make it possible for you to receive the kind of information you need in time to take action, over a thousand trained Dodge news gatherers make regular calls on more than 138 thousand established sources of information, and many thousands of others who come into the market only once, or infrequently – over 2 million personal calls and 1½ million phone calls per year.

Send today for "Dodge Reports – How to use them effectively." This booklet includes the famous Dodge Specification Form, which helps you define the kind and size of work you can handle best, in the area which you can cover most profitably.

F. W. Dodge Corporation, Construction News Division, Dept. 7088
119 West 40th Street, New York 18, N. Y.

I want to know how to get more new construction business. Please let me see some typical Dodge Reports for my area. I am interested in the markets checked below:

☐ House Construction ☐ General Building
☐ Engineering Projects (Heavy Construction)

Area_____
Name_____
Company_____
Address_____
City_____ Zone_____ State_____

Dodge Reports
For Timed Selling to the Construction Industry

For more facts, use coupon, or Request Card at page 18 and circle No. 283

The low transportation and erection costs of a Noble portable batching plant reportedly allow Whitten Concrete, Inc., of Stoneham, Mass., to operate profitably 140 miles from home base, on the 15,000-cubic-yard concrete job at the Ball Mountain, Vt., dam project. At the remote site, beyond economic range of existing stationary plants, the batching plant on wheels is in favorable position to handle concrete requirements of the proposed Townshend Dam, 5 miles downstream. With a typical output of 700 to 1,000 cubic yards per day, the plant can also supply similar proposed projects in Springfield and Hartman, Vt. For further information write to the **Noble Co.**, Dept. C&E, 1860 Seventh St., Oakland, Calif., or use the Request Card at page 18. Circle No. 25.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

New self-powered drill is lightweight, versatile

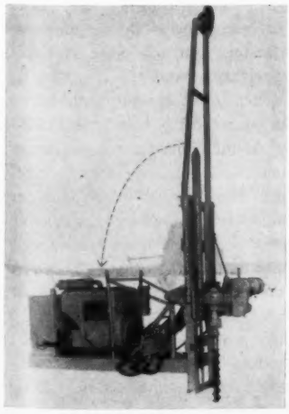
Mobile Drilling, Inc., has available a new drill for continuous flight augering to 75 feet, coring to 500 feet, and boring holes up to 24 inches in diameter. The unit is also said to be ideally suited to soil sampling, both disturbed and undisturbed, and is quickly convertible from one type of drilling to another.

Designated Explorer B-40, the drill is self-powered by a 4-cylinder 36-hp air-cooled engine. It is also available without engine for mounting on any PTO-equipped truck, barge, or tractor. Its compact size reportedly permits installation on ½-ton carriers.

Mounting dimensions in inches for the drill assembly are length, 37½; width, 26½; height, 55 (tower down) and 86¼ (tower up). Mounting dimensions for power assembly are length, 45½; width, 26½; and height, 40 inches.

The power-takeoff model weighs 1,400 pounds, making the Explorer especially advantageous in locations which are inaccessible to larger, heavier drills. To increase mobility, both tower and drill frame lower to horizontal position.

For further information write to Mobile Drilling, Inc., Dept. 31, Dept. C&E, 960 N. Pennsylvania St., Indianapolis, Ind., or use the Request Card at page 18. Circle No. 55.



Specifically designed for augering, core drilling, and large-diameter earth boring, the Explorer B-40 is self-powered by a 36-hp engine.

It's LIGHTER *Than You'd Think!*

How NAYLOR Combines Built-in Strength and Safety With the Economies of Light Weight

There's good reason why NAYLOR Spiralweld pipe gives you performance you'd expect only from heavier pipe.

NAYLOR's exclusive spiral-lockseam structure makes this possible. It provides the extra collapse strength and safety required for heavy-duty service. Yet its light weight assures easier handling. Installation is faster, too. And you save even more time and work when you use the one-piece NAYLOR Wedgelock coupling to speed connections.

Note how NAYLOR pipe hugs the wall. Lines can be extended with only one side of the pipe in the open.

For moving air and water, and for dredging, materials handling, ventilating and other services, it will pay you to consider the extra performance built into NAYLOR pipe.

For details, write for Bulletin No. 507

NAYLOR PIPE *Company*

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

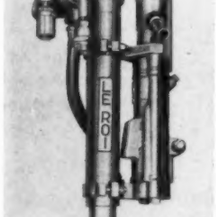
For more facts, use Request Card at page 18 and circle No. 284

High clearance and a short turning radius are features of the Allis-Chalmers utility tractors. These units lend themselves readily to such equipment as center-mounted mowers. The Power Director, with its high and low range, provides eight forward speeds and the ability to shift on-the-go for fast mowing. Ease of changing wheel spacing gives correct wheel widths for stability on slopes. Cutter-bar mowers are also available for these tractors. For further information about Allis-Chalmers utility tractors, write to the **Allis-Chalmers Mfg. Co.**, Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 104.

Dust-collecting stoper features telescopic feed

A new heavy-duty stoper with telescopic feed and a dust-collecting system is available from the Le Roi Division of the Westinghouse Air Brake Co.

Designated Model S12VT, the unit is available in two feed lengths, 34 and 52 inches. Over-all closed lengths



are 25½ and 34½ inches; over-all extended lengths, 59½ and 86½ inches. Steel changes are 30 and 48 inches.

In addition to the telescopic feed, the new stoper has a chuck of cross-pin design, equalizing radial pressure without deflecting the chuck.

All controls are on top of the feed cylinder.

Drill steel required is ⅞-inch hexagon with a ⅜-inch-diameter hole. Hose and air connections are ¾-inch. Air consumption is 120 cfm. Weight of the stoper is 92 pounds for the 34-inch feed, and 98 pounds for the 52-inch feed.

For further information write to the Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, 3716 W. Wisconsin Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 77.

Lightweight impact wrench available in two models

A new Gardner-Denver impact wrench is available in two models. Both feature light weight and small dimensions, and are rated at ¾-inch nut-setting capacity.

Model 18B-7 is equipped with ¾-inch square drive, and Model 18B-7S has ⅝-inch built-in hexagon slip chuck. Accessories for the wrench include stud drivers, socket adapters, hexagon shank socket holders, and universal joint socket adapters.

The unit is said to have the ruggedness and reserve capacity for extended periods of operation, and to reduce maintenance problems to a minimum.

For further information write to the Gardner-Denver Co., Dept. C&E, S. Front St., Quincy, Ill., or use the Request Card that is bound in at page 18. Circle No. 134.

New! Perfect Vision Bridge Rail

Handsome, Sturdy, Easy to Install

Bethlehem's new Perfect Vision bridge rail is attractive, sturdy and easy to install. Steel box channels and malleable iron posts arrive at the bridge site ready for quick installation. There's no welding or riveting necessary; after placing posts in position, only a few nuts must be tightened.

The new rail is made in four styles: one- or two-rail models for mounting on a parapet, and three- or four-rail designs for a curb or sidewalk.

Rails are furnished in any length from 7 to 20 ft. They are 2 x 5 in. box channels cold-formed from ⅛-in. steel and galvanized in accordance with ASTM specification A-123. The galvanized posts are spaced on 9 ft 6 in. centers and connected to the parapet by four 1⅛ in. anchor bolts set in the concrete. The railing exceeds the requirements of the 1953 AASHO Specifications for railing loading. And when rails are damaged, they're easily replaced.

Get full details on this sturdy, handsome bridge rail, with "see-through" design. Just phone or write the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 285

Offer redesigned line of bottom-dump haulers

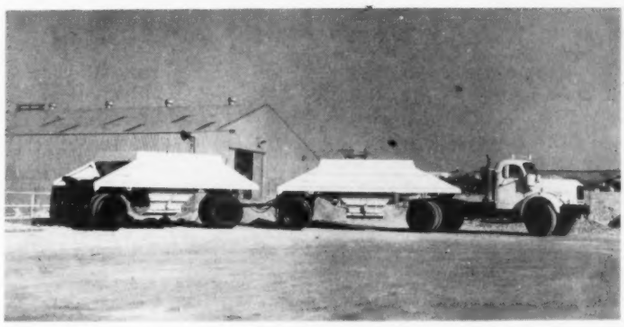
A redesigned series of bottom-dump hauling units, including lightweight and heavy-duty semitrailers and trains, has been announced by Cook Bros. Equipment Co.

According to the manufacturer, this equipment can be fully loaded on the move from belt-type loaders in less than 15 seconds, and full loads are unloaded on the move in less than 10 seconds.

The foremost feature of the new series is said to be the strong, rugged frame construction. Frames are constructed of square seamless tubing reported to withstand the stress and strain of hauling on or off the highway and severe shock loading conditions. The outer shell is made of a lightweight, high-strength material.

The semitrailer has a physical capacity of 35 tons payload for off-the-highway work. It will haul 20 tons or more, legally, on the highway. The lightweight bottom-dump trains have a top payload capacity of 28 tons.

For further information write to the Cook Bros. Equipment Co., Dept. C&E, 3334 San Fernando Road, Los Angeles 65, Calif., or use the Request Card that is bound in at page 18. Circle No. 57.



Cook Bros.' new line of bottom-dump haulers includes this versatile heavy-duty train.

High-tensile electrodes increase deposit rates

The Lincoln Electric Co. announces two new iron-powder, low-hydrogen-type electrodes for making high-strength joints in alloy steels.

Jetweld LF-90 is classed E-9018, and also meets the requirements of E-8018-B2. Jetweld LH-110 is classed E-11018. The low-hydrogen coatings with iron powder added increase the deposit rates and improve operating characteristics, according to Lincoln.

Both electrodes are available in the ⅛, 5/32, and 3/16-inch sizes.

For further information write to The Lincoln Electric Co., Dept. C&E, 22801 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 110.

New truck tire made with all-nylon cord

A new truck tire made with all-nylon cord for over-the-road service is announced by the B. F. Goodrich Tire Co.

Designated All-Nylon Heavy Duty Express, and made in tubeless and tube types, the tire is available in 13 sizes, ranging from 6.70×15 to 10.00×22.

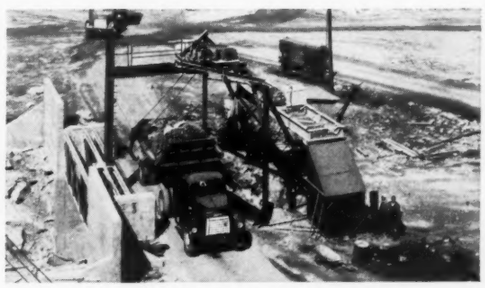
According to the company, the tire has a tread as thick as that of tires built for heavier service. Its Flex-Rite nylon-cord body is said to withstand double the impact of ordinary cord materials.

For further information write to the B. F. Goodrich Tire Co., Dept. C&E, 500 S. Main St., Akron, Ohio, or use the Request Card at page 18. Circle No. 70.

"It takes a lot of truck to handle 25- to 30-ton loads!"

—says W. B. Couch, superintendent of the Campbell Limestone Co., Beverly, S. C., in reporting on their GMC Diesels

OFF-THE-ROAD HAULING THAT'S TOO HEAVY FOR LEGAL HIGHWAY TRAVEL is rugged business. Yet Campbell Limestone's GMC Diesels do this day after day—running 10-hour days in the summer. They've never required any pampering—even after the equivalent of 100,000 miles of this work. It's the pay-off on GMC's *all-truck* construction—as the world's largest exclusive commercial vehicle manufacturer can supply it.



SOME OF THE HUGE BOULDERS THAT HURTLE DOWN into Campbell's GMC's are half the size of a sedan. In fact, the specially built dump bodies are of 1-inch steel plate. And underneath is the GMC brand of super-stamina that shrugs off this kind of punishment—for years.

EVEN CLIMBING THE STEEP RAMPS with their huge loads is easy for these GMC's. They've got the power reserve to keep rolling where other trucks can't make the grade. You can thank those high-torque 2-cycle Diesels for that!

GMC TRUCK & COACH—*A General Motors Division*

GMC-America's Ablest Trucks ½ to 45 tons

For more facts, use Request Card at page 18 and circle No. 286

On the Hydra-Carry, the bed-tilt and winch valve controls are located at the side of the platform for safety of operation.

Tilt-bed truck body for equipment transport

The Hydra-Carry, an improved model of the firm's truck hoist and winch, is announced by the Henderson Mfg. Co.

This equipment hauler features a new front-end latch in addition to a past-center locking device, plus a new hydraulic pump and heavier subframe.

The winch of the Hydra-Carry consists of a hydraulic cylinder, one-half the length of the platform, which controls the winch cable and is capable of pulling an 8-ton tractor to the front of the inclined platform in a few seconds. The platform is then lowered to a level position and hydraulically locked down for transporting.

For further information write to the Henderson Mfg. Co., Dept. C&E, 1203 Rockford Road S. W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 56.

Heavy-duty ripping tool for tough rock strata

A new type of heavy-duty ripping device for tough rock strata is announced by the Construction Equipment Division of the Double J Breaker Co., Inc.

One of the features of this ripping tool is its breaker plate, a 22-inch-wide steel wedge weighing about 140 pounds, and attached to the rear of the shank in a horizontal position. This breaker plate works on the same principle as a log-splitting wedge, in this case greatly expanding the fractures in the stratum to the right and left of the shank and in front of the ripper point, while at the same time lifting ripped material upward.

The breaker plate's riding angle is easily controlled by an adjustable shoe mounted on the bottom of the breaker plate.

The 950-pound tool operates from the tractor ripper bar. Models are available for nearly all heavy-duty tractor-mounted rippers, the company reports.

For further information write to the Double J Breaker Co., Inc., Dept. C&E, 3484 E. Gage Ave., Bell, Calif., or use the Request Card at page 18. Circle No. 53.

For more data on any item, circle indicated number on card at page 18.

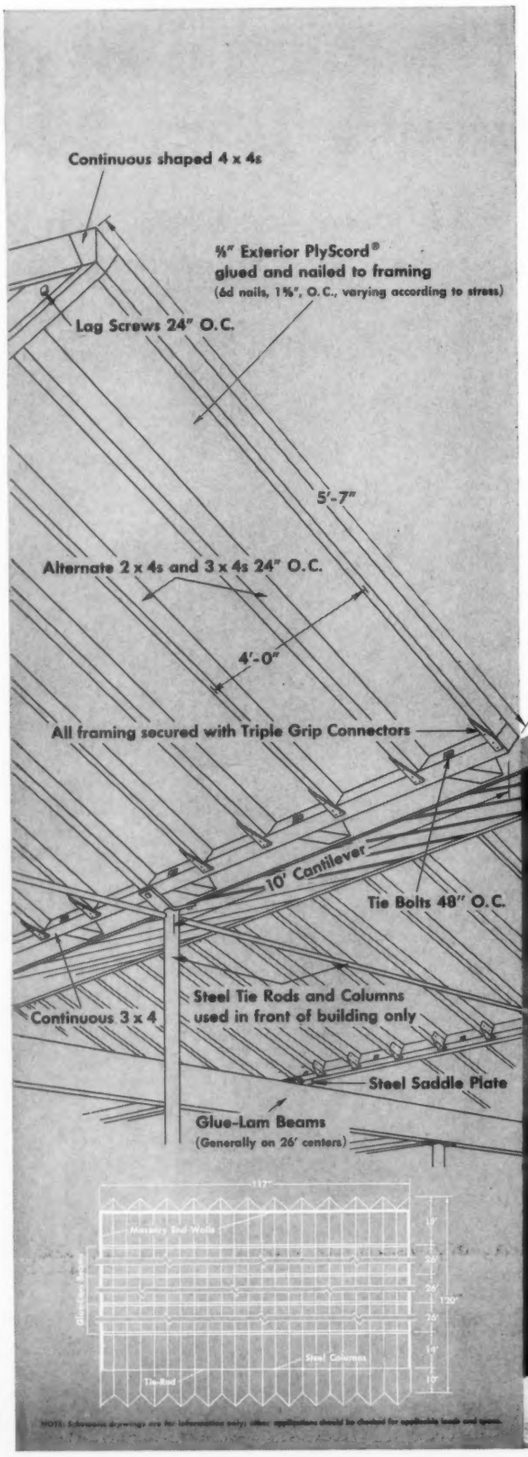
Drills feature diamond bits for fast cutting

Diamond drills for drilling through reinforced concrete, brick, stone, tile, and other hard materials are available from the E. J. Longyear Co. The bits reportedly can drill a 4-inch hole in concrete four inches thick in four minutes or less.

The three drills in the line are heavy-duty electric drills (¼, ⅜, and 1¼ inch) fitted with water swivels. The Model 100 drill is hand-held for holes from ⅜ inch to 2 inches. The Model 200 may be hand-held or used in a mounting bracket with lever feed, for holes up to 3 inches. The Model 300 is mounted on a column-and-base with either lever feed or worm-gear feed, and drills holes up to 6½ inches in diameter.

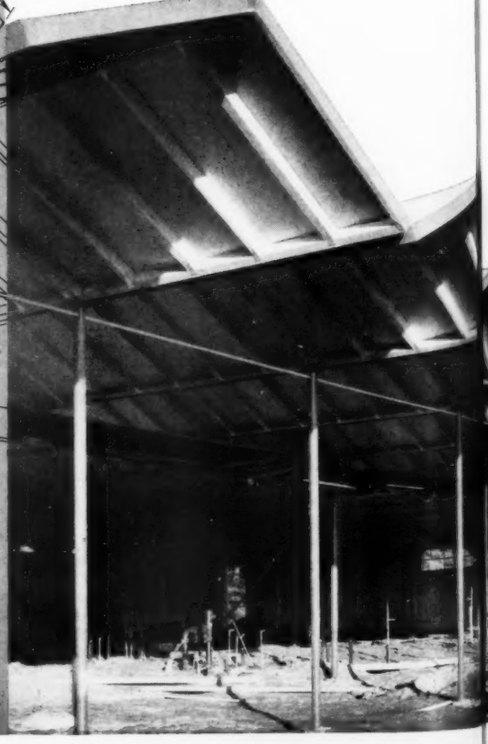
Standard bit sizes range from ⅜ to 6½ inches. All except the smallest sizes are of the "coring" type, cutting out a core of the material being drilled. Holes as deep as 24 inches can be drilled.

For further information write to the E. J. Longyear Co., Dept. C&E, 76 S. 8th St., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 2.


Continuous shaped 4 x 4s
⅝" Exterior PlyScord®
glued and nailed to framing
(6d nails, 1⅝", O.C., varying according to stress)
Lag Screws 24" O.C.
5'-7"
Alternate 2 x 4s and 3 x 4s 24" O.C.
4'-0"
All framing secured with Triple Grip Connectors
10' Cantilever
Tie Bolts 48" O.C.
Continuous 3 x 4
Steel Tie Rods and Columns
used in front of building only
Steel Saddle Plate
Glue-Lam Beams
(Generally on 26' centers)

New low-cos ir cover 14

YEAKEL-POWELL BUILDING
LOCATION: Burien, Wash.
ARCHITECT: Jack N. Bryant, A.I.A.
STRUCTURAL ENGINEER: Harvey H. Johnson
CONTRACTOR: Powell Construction Co.



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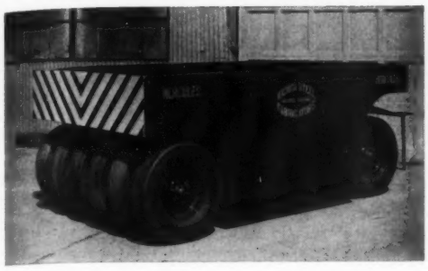


The oscillating and staggered wheel design of the Hercules PT series of pneumatic pull-type rollers permits the rigs to do a variety of work.

New line of pneumatic pull-type rollers

Wichita Steel Fabricators, Inc., announces its new Hercules PT series of pneumatic pull-type rollers. Featuring oscillating and staggered wheel design, the units are available in models of 9, 11, and 13 wheels, respectively.

The Model PT-9 has a 68-inch over-all rolling width, and a weight with ballast of 17,225 pounds. For the PT-11 and PT-13, respectively, the rolling widths are 83 and 98 inches, the weights 24,015 and 32,390 pounds.

According to the manufacturer, the wheel design prevents bridging between high spots or leaving voids uncompacted. Equal wheel pressures are another feature stressed. In addition, the unit can be locked to convert to non-oscillating operation.

Applications for these Hercules rollers include use on base and surface courses, sealing completed fills, surface treatments, floated surfaces, hot and cold asphalts, and stabilized soils.

For further information write to Wichita Steel Fabricators, Inc., Dept. C&E, 3400 N. Broadway, Wichita 4, Kans., or use the Request Card at page 18. Circle No. 60.

Transistor warning light operates in all weather

A new transistor flasher warning light is announced by the Electronic Specialties Co.

Designated Jumbo Esco flare, the

light is a cartridge-type, hermetically sealed unit said to operate in all weather conditions, and even under water.

Among its other features are battery life up to 6 months, rustproof die-cast heads that swivel 90 degrees, and heavy lenses in amber or red. The light is also furnished with parabolic reflector and plain lens.

For further information write to the Electronic Specialties Co., Dept. C&E, Batavia, Ill., or use the Request Card that is bound in at page 18. Circle No. 64.

Offer tail-gate mixer for asphalt patchwork

A tail-gate mixer for hot asphalt patchwork, that can be attached or detached from a truck in a matter of minutes by one man, is available from the Wylie Mfg. Co., Inc.

The unit features a reversing transmission which moves back and forth over the heated section to provide a more thorough mixing. No direct flame comes in contact with the asphalt mix, and the heat chamber is so constructed that propane gas will drain out if the flame is extinguished, thus preventing a flashback when the burner is relighted. The pugmill is flashproof.

For further information write to the Wylie Mfg. Co., Inc., Dept. C&E, P. O. Box 7086, Oklahoma City, Okla., or use the Request Card at page 18. Circle No. 44.

fir plywood folded plate roof 14,000 sq. ft. in only 9 hours

Fabricated on the job with common labor, new roofing system costs 10-20% less than conventional construction—provides attractive appearance, superior structural values.

THIS PRECISELY ENGINEERED folded plate roof—the first of its kind using lumber-framed plywood sections in series—offers several unique advantages:

Low cost and fast job-site assembly using common labor. Plywood components were installed by a 6-man crew in less than nine hours. Total costs, including all labor and materials, came to less than 80c per square foot—a figure some 10 to 20 percent less, locally, than joist or truss construction accomplishing the same clear floor area.

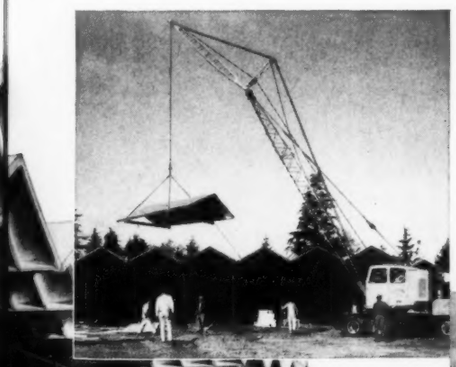
Structural simplicity. The roof consists of 11 plywood folded plates which rest on four glue-lam beams. Each of the inclined planes is a rigid plywood diaphragm, paired to form a giant self-supporting inverted V-beam which spans 10 feet from valley to valley and 26 feet from beam to beam. Posts, trusses and purlins are eliminated and the architect estimates that spans could be almost doubled where called for by the design.

Design adaptability. The plywood folded plate system provides large, clear floor areas and freedom in arranging—or rearranging—interior partitions. The folded plate creates an unusually attractive profile, with bays defining individual store areas.

FOR INFORMATION about fir plywood folded plate construction or other data—write
DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON
—an industry-wide organization devoted to research, promotion and quality control

Always specify by DFPA grade-trademarks

DFPA TESTED QUALITY



Fir plywood folded plate components were built on ground, crane-lifted into position in pairs. Heaviest lift was about 1,000 lbs. Contractor was impressed with the ease with which his crew assembled and erected sections.

The folded plate provides distinctive profile, freedom in placement of interior partitions. The front was given a 10′ overhang to cover store entrances. Underside was covered with medium density overlaid plywood to provide smooth, check-free paint base.

For more facts, use Request Card at page 18 and circle No. 287

The adaptation of its highway digger to the Chevrolet four-wheel-drive trucks is announced by the Roper Mfg. Co. Because this digger is complete with a power plant and universal attaching kit, the truck need only be equipped with a rear power takeoff. The digger digs to a 48-inch depth, and is available with augers up to 14 inches in diameter. For further information about this digger-truck combination write to the **Roper Mfg. Co.**, Dept. C&E, 7th and Elm Sts., Zanesville, Ohio, or use the Request Card at page 18. Circle No. 16.

New conversion kit doubles drilling capacity

Molco Drilling Machines, Inc., announces its Twin Mole Junior kit, said to increase the standard Mole Junior diamond core drilling machine to twice its normal drilling capacity.

According to the manufacturer, by

using an additional high-torque electric drill to supplement the power of the original drill, the kit allows 6-inch-diameter holes to be drilled through concrete, brick, and other hard masonry materials at the rate of 1 inch per minute.

The kit comes complete, and includes a 1¼-hp Black & Decker drill, brackets, chain, and guard.

For further information write to Molco Drilling Machines, Inc., Dept. C&E, 1100 20th St. N.W., Washington, D. C., or use the Request Card at page 18. Circle No. 66.

Offer offset boring head for welding to augers

The Pengo offset boring head, designed for welding to the bottom of any heavy-duty cast-steel auger to improve its performance, is announced by the Petersen Engineering Co., Inc.

The new unit reportedly employs

the same teeth and pilot bit used on the standard heavy-duty Pengo augers, and includes such features as an added helix for more dirt-carrying capacity, and a valve to prevent loss of dirt in the hole.

For further information write to the Petersen Engineering Co., Inc., Dept. C&E, 460 Kifer Road, Santa Clara, Calif., or use the Request Card that is bound in at page 18. Circle No. 52.

How do the prices you pay for subbase materials compare with these?

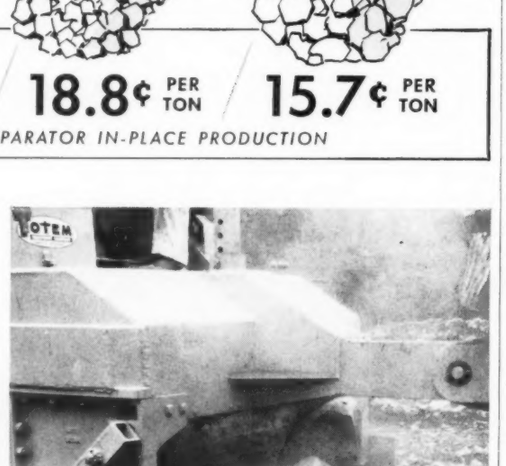
31.5¢ PER TON / 23.6¢ PER TON / 18.8¢ PER TON / 15.7¢ PER TON

THESE ARE COSTS BASED ON PREPARATOR IN-PLACE PRODUCTION

In-place production of subbase materials from windrowed bank-run or native over-size materials by the BROS Preparator is producing outstanding cost savings in many parts of the country and the world. The costs per ton shown here are based on conservative averages; compare your present material costs with them. The Preparator can make sizeable cost savings for you, too.

Cost of BROS Preparator, amortized over 3 year period, averaging 1,000 hours production per season, and including fuel, changing hammers (but not hammer cost) and regular maintenance ..... $ 9.16 per hour
Tow tractor or grader operating cost .. 8.40 per hour
Set of BROS ALLOY hammers(22), av. production per set, 16 hours ..... 29.70 per hour
Total hourly operating costs ..... $47.26 per hour
Cost at 150 tph production rate .... 31.5 cents per ton
Cost at 200 tph production rate .... 23.6 cents per ton
Cost at 250 tph production rate .... 18.8 cents per ton
Cost at 300 tph production rate .... 15.7 cents per ton

Production rates will vary with the type of materials and the sizes required. Production exceeding 300 tph has been very frequent. Hammer wear also varies with type of material; with but several exceptions, wear has averaged 16 or more hours production on every job. Material reduced from native over-size has sharp friction angles which contribute to resistance to displacement under traffic loads.



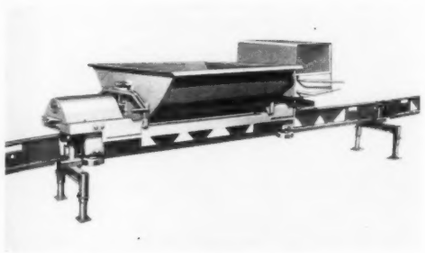
The Preparator is a tough, rugged machine, reducing all types of materials from limestone to blasted lava rock to acceptable subbase gradations. Your nearest BROS Dealer has the latest information on the Preparator; see him this week.

BROS **BROS *Incorporated***
ROAD MACHINERY DIVISION

1057 TENTH AVE. S.E.
MINNEAPOLIS 14, MINN.

Write today for the full report on the Ohio tests and for complete new literature describing the new BROS SP-730 pneumatic roller. It's free of cost or obligation!

For more facts, use Request Card at page 18 and circle No. 288



This Rex Railporter carries up to 20 cubic feet of concrete or 3,000 pounds of other construction materials. The unit rides a monorail, and its operation is entirely automatic.

Matrial handler operates on monorail

An improved, heavier-duty Rex Railporter—a portable self-propelled material handler that transports concrete and other construction materials over an easily set up monorail system—is announced by the Chain Belt Co. The unit makes its round trips from supply point to destination unattended, even stopping automatically.

Compact in design, this Railporter features a capacity of 20 cubic feet of concrete or 3,000 pounds of loose materials. The 12-foot rail sections reportedly can be set up at the rate of 450 feet of track per hour with a three-man crew. Additions to the tracks as the job progresses, or the adding of curves and switches to meet any job location needs, are easily made.

For further information write to the Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 14, Wis., or use the Request Card at page 18. Circle No. 45.

Heavy-duty transmission for front-end loaders

Borg-Warner Corp.'s Warner Gear Division has available a heavy-duty transmission for use on front-end loaders, lift trucks, and other material-handling equipment.

Designed for use with either gasoline or diesel engines, the new transmission is said to combine the most desirable features of the torque converter and the fluid coupling with the added advantage of power shifting in one or two speeds for forward and reversing operations. Heavy torque requirements, such as knifing under loads, starting on ramps, or towing and pushing, are obtained with torque converters driving through low or high-speed transmission gears.

Because of hydraulic shifting there are no gear-shifting delays, and the operator has fingertip touch control for fast, smooth change of direction.

For further information write to the Borg-Warner Corp., Warner Gear Division, Dept. C&E, Muncie, Ind., or use the Request Card at page 18. Circle No. 11.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

The fork-lift attachments available for all Michigan tractor shovels vary in capacity from 4,000 pounds at 24 inches from the heel of the fork on the 1¼-yard Model 75A to 15,000 pounds on the 6-yard Model 375A. According to the manufacturer, the operator can switch from bucket to forks simply by removing and reinserting four pins. There is no need to alter hydraulic connections. For further information write to the Construction Machinery Division, **Clark Equipment Co.**, Dept. C&E, P. O. Box 599, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 108.

NOW COSTS LESS

to play safe by shoring with steel

FOSTER Lightweight PILING

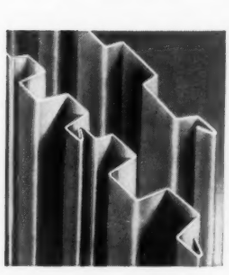
SEWAGE PROJECT, SAN FRANCISCO, CAL.
WALTER LENKEIT COMPANY

BEACH EROSION PROTECTION, VELASCO, TEXAS
MR. DOUGLAS PRINCE, OWNER

ELEVATOR WELL COFFERDAM, PITTSBURGH, PA.
SIESEL CONSTRUCTION COMPANY

New lower prices on this "fastest" steel way to protect all light-load excavations!

We've just been able to reduce prices substantially on this modern steel sheeting—ideal for light cofferdams, pipe trenches and other light-load excavations. Count on far better, far safer, and far more economical protection than wood sheeting from this exclusive-design, deep box-type corrugation. It provides greater strength pound-for-pound than any other lightweight piling. And you can use it over and over again, drive it in mild curves or circles where required, and drive it with standard light equipment. Now, more than ever, dollar for dollar, this is your most economical buy. Mill certificates available.



New Foster Catalog lists specifications and properties of two standard, high strength sections, also available galvanized. Refer to Sweet's Industrial Construction File or send for New Catalog CE-8.

STEEL-SHEET PILING · PIPE PILES · H-BEARING PILE · PIPE · RAILS · BRIDGE RAILING · HIGHWAY PRODUCTS

L. B. FOSTER CO.

PITTSBURGH 30 · NEW YORK 7 · CHICAGO 4 · HOUSTON 2 · ATLANTA 8 · LOS ANGELES 5

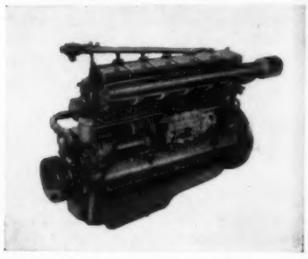
For more facts, use Request Card at page 18 and circle No. 289

This new curbing machine has a 6,000-pound positive extrusion force said to eliminate clogging. It reportedly can lay up to 150 feet of 6-inch asphalt curb per hour, and requires no sand packing. Three standard forms may be easily interchanged. The machine is self propelled, requiring only steering by the operator. For further information write to the **Browning Mfg. Co.**, Dept. C&E, P. O. Box 2702, San Antonio, Texas, or use the Request Card at page 18. Circle No. 136.

German-built diesel available in U. S.

The Curtiss-Wright Corp. announces that the Model MB 846A Mercedes-Benz diesel engine is now available in the United States through its Utica Division. This engine is produced in the 130 to 240-hp class.

It is a 6-cylinder, vertical-in-line,



4-cycle, liquid-cooled unit. The combustion system is the Daimler-Benz pre-combustion chamber type, and utilizes Robert Bosch injection pumps and nozzles. Glow plugs to aid starting in low-temperature weather are standard equipment.

The MB 846A weighs 4,075 pounds with over-all dimensions of 91 inches long, 59 inches high, and 32 inches wide.

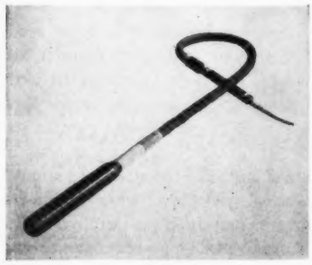
Applications for the MB 846A include generator sets, drilling rigs, heavy-duty trucks, and many others. It is available in either heat-exchanger or radiator-cooled models.

For further information write to the Curtiss-Wright Corp., Utica Division, Dept. C&E, 50500 Mound Road, Utica, Mich., or use the Request Card at page 18. Circle No. 87.

Vibrators work at 15,000 vibrations per minute

Two new lightweight electric motor-in-head concrete vibrators are announced by Vibro-Plus Products, Inc.

The Model AEH-45 weighs 14 pounds, has a head diameter of 1¾



inches, and operates at 15,000 vibrations per minute. The Model AEH-65 weighs 24 pounds, has a head diameter of 2⅝ inches and also operates at 15,000 vibrations per minute. Both units are powered by a Universal motor that operates off any standard 115-volt 60-cycle outlet.

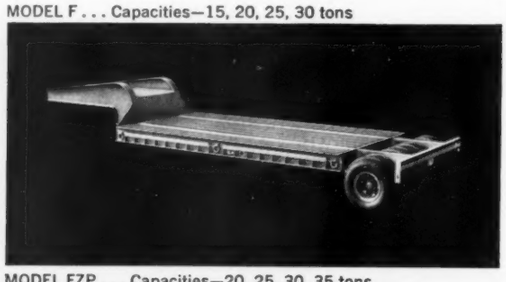
The vibrators, which can be handled easily by one man, are available in 7, 14, and 21-foot lengths, and 25 feet of cable is supplied with each unit to give extra working radius.

For further information write to Vibro-Plus Products, Inc., Dept. C&E, Stanhope, N. J., or use the Request Card that is bound in at page 18. Circle No. 4.

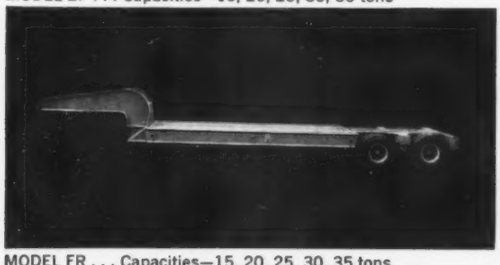
TRAILMOBILE'S COMPLETE LOW-BED LINE OFFERS YOU JUST THE RIGHT TRAILER FOR EVERY APPLICATION

MODEL FS . . . Capacities—10, 15 tons

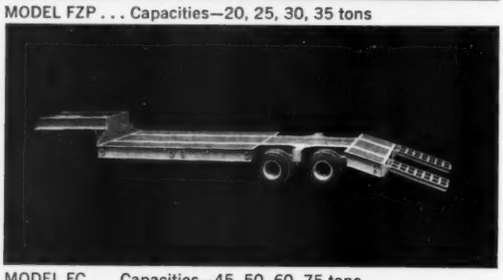
MODEL F . . . Capacities—15, 20, 25, 30 tons



MODEL ZP . . . Capacities—15, 20, 25, 30, 35 tons



MODEL FZP . . . Capacities—20, 25, 30, 35 tons

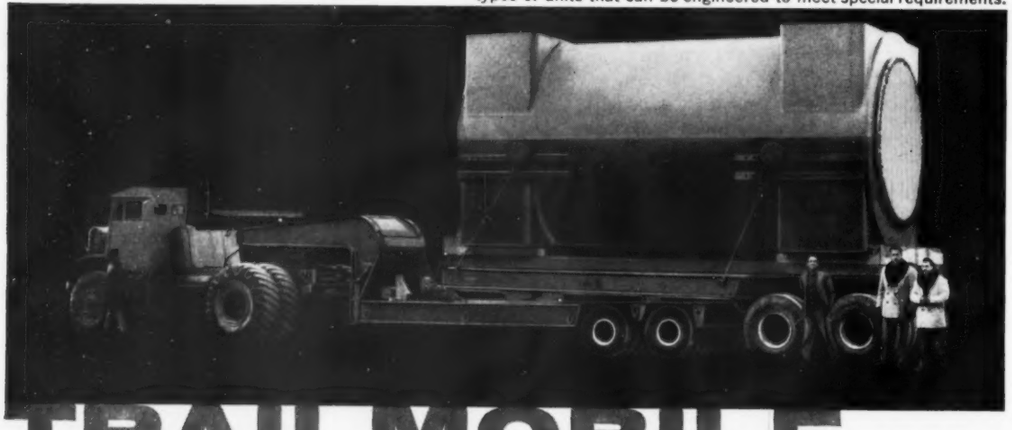


MODEL FR . . . Capacities—15, 20, 25, 30, 35 tons

MODEL FC . . . Capacities—45, 50, 60, 75 tons

EVEN 182 TONS . . .

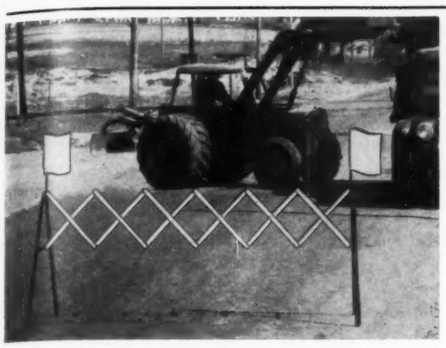
This specially built Trailmobile Low-Bed trailer is shown carrying a generator stator weighing 365,000 pounds. This is typical of the many types of units that can be engineered to meet special requirements.



TRAILMOBILE INC.

CINCINNATI 9, OHIO • SPRINGFIELD, MISSOURI • LONGVIEW, TEXAS • BERKELEY 10, CALIF.

For more facts, use Request Card at page 18 and circle No. 290



Horizontal shoring especially designed for beam and slab concrete floor forms permitted the forming and pouring of 100,000 square feet of concrete flooring in less than seven weeks. The job was the new Monticello Raceway for the Sullivan County, N.Y., Harness Racing Association. According to the contractor, Purchase Concrete & Building Corp., White Plains, N. Y., the use of Spanall horizontal shoring effected big savings in time with the elimination of cumbersome vertical members. For further information on Spanall horizontal shoring, write to **Spanall of the Americas, Inc.**, Dept. C&E, 787 United Nations Plaza, New York 17, N. Y., or use the Request Card at page 18. Circle No. 123.

Emergency barricade collapses for storing

Guard-Gate, a metal fold-up type of emergency barricade is offered by West Side Iron Works, Inc.

The unit is a 3-foot-high one-piece barrier that extends to 8 feet in use, yet can be collapsed to 9 inches for storing. According to the manufacturer, it requires no bars, bolts, boards, assembly, or loose parts. End supports are black; cross bars are yellow; and red warning flags are placed at either end.

For further information write to West Side Iron Works, Inc., Dept. C&E, 327 Front Ave., Grand Rapids 4, Mich., or use the Request Card at page 18. Circle No. 58.

New ac-dc welder is versatile unit

A new gasoline - engine - driven welder/power plant is announced by the Miller Electric Mfg. Co., Inc.

Designated Model DAH-350 Fireball, the unit is said to incorporate in one machine an ac-dc welder for (1)

metallic arc, or (2) tungsten inert-gas welding, plus (3) ac power plant, and (4) 1-kw dc power while welding. Six separate amperage ranges are available in both ac and dc.

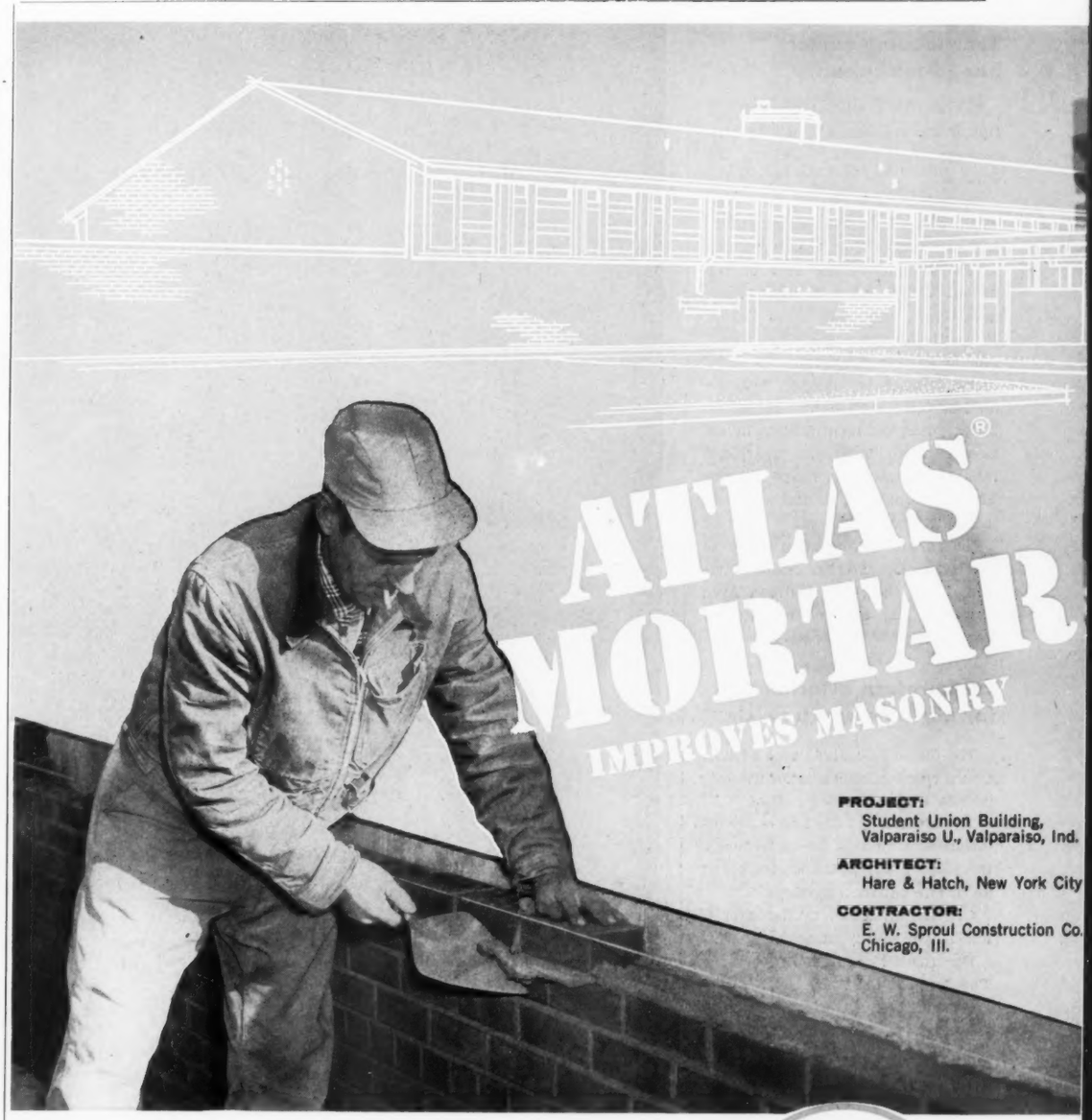
Additional standard equipment includes a polarity switch, either continuous or "start only" high frequency, and an automatic inert-gas control panel with solenoid valve and postflow timer.

The DAH-350 is available either skid-mounted or with a trailer.

For further information write to the Miller Electric Mfg. Co., Inc., Dept. C&E, 718 S. Bounds St., Appleton, Wis., or use the Request Card at page 18. Circle No. 12.

For more facts on these products, circle the indicated number on the Request Card at page 18.

For more facts, circle No. 291 →



"...best in workmanship...best in strength,"
says Henry Gagne, Masonry Foreman,
E. W. Sproul Construction Co.

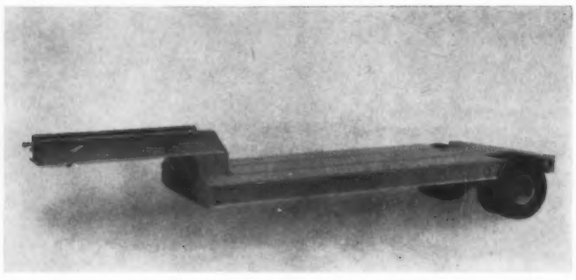
- Mortar in masonry construction must resist the destructive effects of weather in any climate.
- Because ATLAS MORTAR is an *air-entraining* masonry cement, it produces a durable mortar that strongly resists deterioration due to weather.
- Quality-controlled manufacture of ATLAS MORTAR cement maintains high product standards, assures uniform performance and appearance on every project.
(Complies with ASTM and Federal Specifications.)

Write for your copy of "Build Better Masonry,"
Universal Atlas. Dept. M, 100 Park Avenue, New York 17, N. Y.
M-72

UNIVERSAL ATLAS CEMENTS

Universal Atlas Cement Company
Subsidiary of **United States Steel**

OFFICES: *Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee · Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco*



The 15-ton capacity, rear-loading C15S-A has an over-all length of 22 feet 4 inches. The platform measures 8 x 13 feet.

Rear-loading trailer has 15-ton capacity

The Martin Trailer Division of the Hyster Co. announces a new 15-ton-capacity rear-loading trailer, the C15S-A.

The unit is built with an 8×13-foot platform, and an over-all length of 22 feet 4 inches from the center line of the kingpin to the rear of the trailer. It features a 58-inch gooseneck throat and carries four 10.00×15, 14-ply tires on a single full-width, tubular cambered axle.

The C15S-A is equipped with air brakes, full I.C.C. lights, reflectors, turn signals, and identification lights, as well as six lash rings, rear load rails, and cast, spoke-type wheels. The platform area is decked longitudinally with hardwood.

For further information write to the Hyster Co., Martin Trailer Division, Dept. C&E, 620 Andrews Ave., Kewanee, Ill., or use the Request Card at page 18. Circle No. 5.

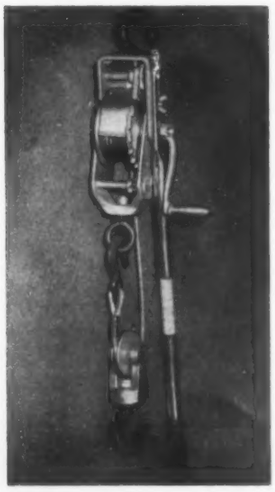
Cable-return attachment for portable winch hoists

The Lug-All Co. announces a cable-return crank attachment for use with its new portable winch hoists.

The crank is quickly and easily detachable. A built-in safety feature is the locking pin which shears before an unsafe situation develops.

Conversion kits are available for all Lug-Alls presently in use.

For further information write to The Lug-All Co., Dept. C&E, 355-E Lancaster Ave., Haverford, Pa., or use the card at page 18. Circle No. 96.



Announce new 15-kw power, light plant

Norseman Marine announces a new 15-kw diesel power and light plant.

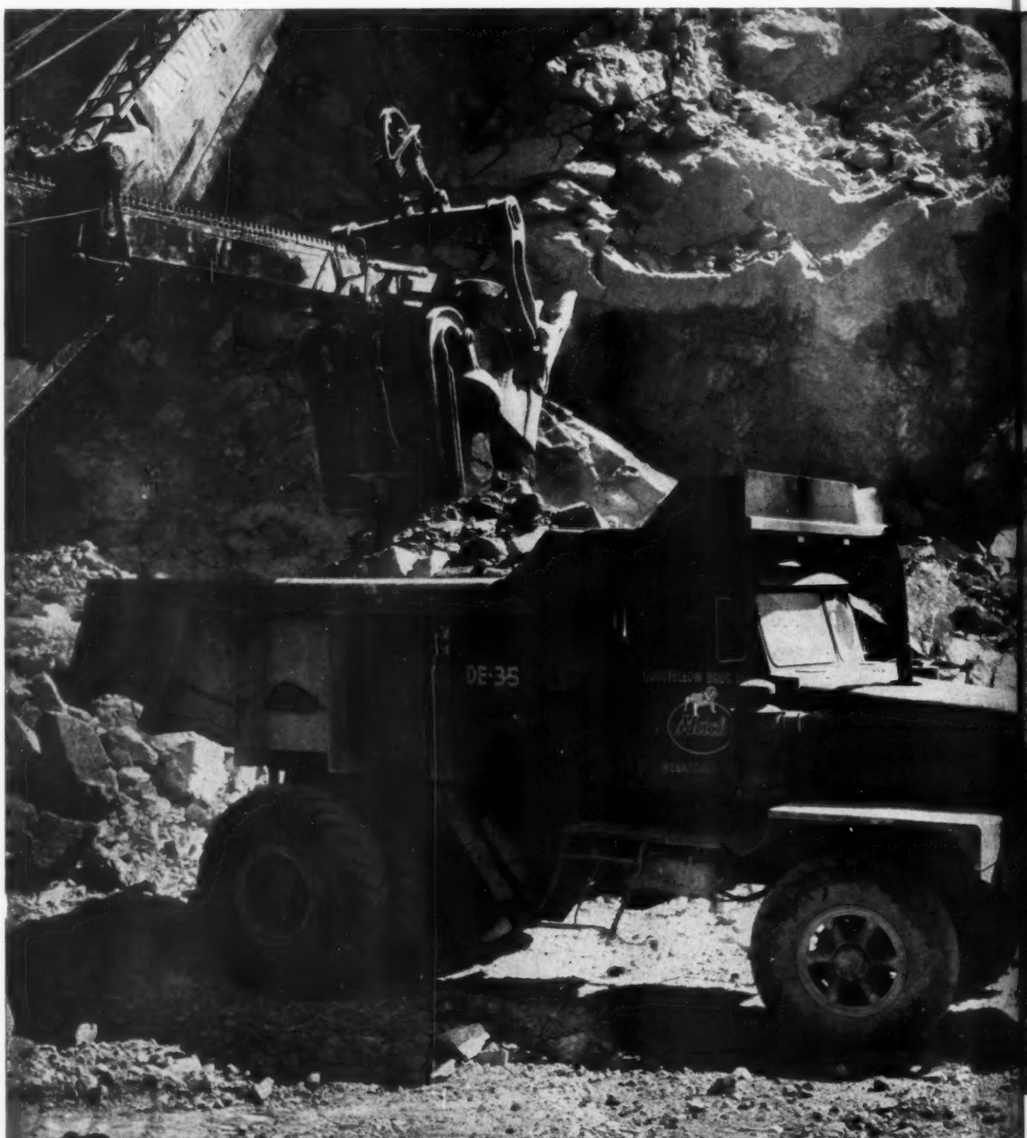
The series ND15 is driven by a 4-cylinder engine equipped with instrument panel, air cleaner, oil filter, muffler, and 12-volt starting system.

Generators on these models are of the revolving field type with directly connected exciter.

Standard voltages offered are 110, 120/240, 240, and 120/208 at 60-cycle ac, but other voltages and frequencies are available to meet special requirements.

All generators are equipped with automatic voltage regulator, rheostat, and voltmeter.

For further information write to Norseman Marine, Dept. C&E, 166 Nevada St., Oshkosh, Wis., or use the Request Card that is bound in at page 18. Circle No. 92.



One of the eight Mack four-wheel dumpers with 22½ ton capacity operated by Goodfellow Bros., Inc., of Wenatchee, Washington. The Macks have proved so valuable that Goodfellow Bros. have four more on order. These heavy-duty haulers are taking on a . . .

punishing road job in

Even in temperatures ranging from —15° to 110°, through mud, extreme dust, snow and ice, and on grades of up to 23%—Goodfellow Bros. know that their Macks will perform efficiently, dependably . . . and profitably.

Under such grueling operating conditions, their Mack dumpers showed their capability on the 3,000,000-yard Rocky Reach Dam earth-moving project on the Columbia River. Then they doubl proved it on the Snoqualmie Pass highway constr tion in Washington's rough mountain country.

Besides providing maximum payloads at minim hauling costs, the Macks are particularly well cepted by Goodfellow Bros' drivers and shop pers nel because of their handling ease, short turn radius and easy accessibility for servicing.

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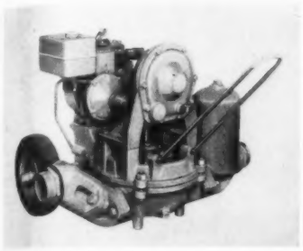


Wheel-mounted pump has 4,300-gph capacity

A wheel-mounted diaphragm pump with 3-inch hose connections is available from the Midland Products Co.

With a capacity of 4,300 gph, these pumps are suited for all types of utility and construction dewatering work. They reportedly handle sludges and solids that would normally clog centrifugal pumps.

The pumps are constructed of aluminum alloy for lightness, with shafts and gears of special material to withstand wear. They can be wheeled about on a job or easily carried by two men.

For further information write to the Midland Products Co., Dept. C&E, 181 Greenwood Ave., Midland Park, N. J., or use the Request Card at page 18. Circle No. 95.

New heavy-equipment tire for use in rough terrain

A rugged new tire for use in rough terrain is announced by The General Tire & Rubber Co.

Called the Rock Rib LCM, the tire is said to feature an ultra-heavy ribbed tread with a variable slope in the groove design which aids in ejection of stones and rock fragments.

Its thick tread and shoulders consist of a specially compounded, cut-resistant rubber stock. Four Nygen cord shock plies buttress the 12 to 20-ply tire body.

The Rock Rib LCM comes in sizes 10.00×20 through 14.00×25. A tubeless model is available in sizes 12.00×25 and 14.00×25.

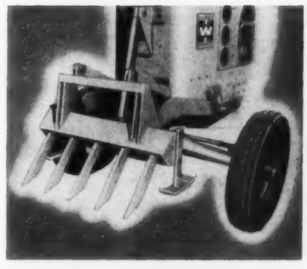
For further information write to The General Tire & Rubber Co., Dept. C&E, 1708 E. Market St., Akron, Ohio, or use the Request Card at page 18. Circle No. 89.

Scarifier attachment cuts 33-inch swath

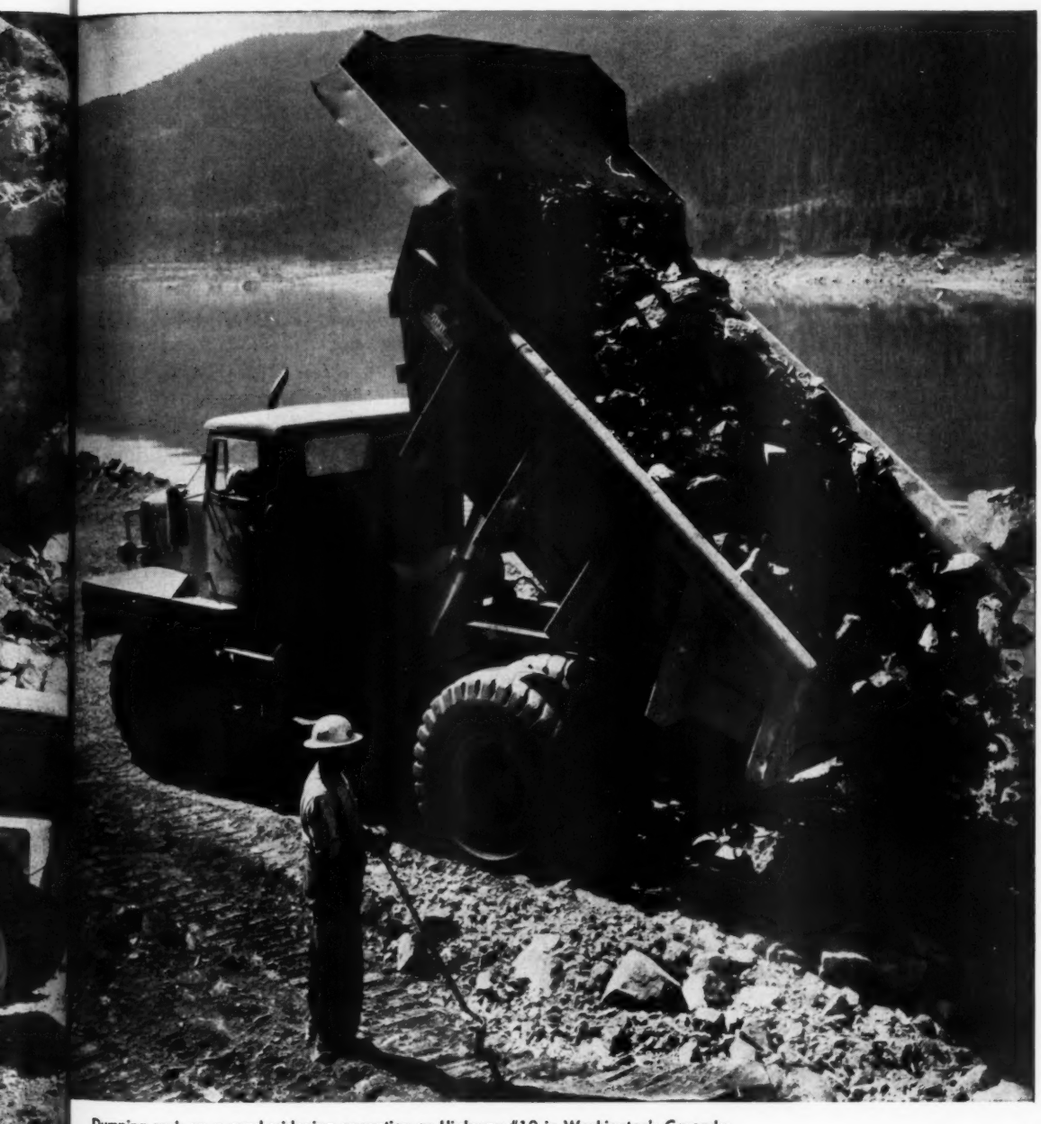
The Huber-Warco Co. announces a new 5-tooth scarifier attachment for the Huber-Warco Maintainer.

The unit is designed for medium and light-duty scarifying of blacktop, stone, gravel, dirt, and other materials. It has a swath width of 33 inches and a scarifier pressure of 2,400 pounds. According to the manufacturer, it can be quickly attached to the same hydraulic-controlled lifting unit that handles the bulldozer and snowplow attachments.

For further information write to the Huber-Warco Co., Dept. C&E, P. O. Box 501, Marion, Ohio, or use the Request Card at page 18. Circle No. 20.



To obtain further information on any of the products described in this section, circle the number given at the end of the item on the Request Card at page 18.



Dumping rock on a road-widening operation on Highway #10 in Washington's Cascade Mountains. Prior to this road job, Goodfellow's 22½ ton Macks were used in the 3,000,000 yd. excavation and backfill for the Rocky Reach Dam near Wenatchee, Washington.

in noqualmie Pass

ney doubt here is a Mack tailored to your construction needs
y constr will provide large-capacity payloads at minimum
untry. cost. Let your Mack representative show you on-
t minim job performance proof that—under today's con-
ly well ons—you can't afford *not* to operate Macks!
hop pers k Trucks, Inc., Plainfield, New Jersey. In
ort turn ada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

For more facts, use Request Card at page 18 and circle No. 292

Rubber-tire trailing wheels, which are hydraulically lifted, make the Model 160 a completely portable unit. The machine also features complete power steering.

Portability the feature of 3 to 5-ton roller

The Model 160 portable roller, a 3 to 5-ton unit equipped with complete power steering, is offered by Littleford Bros., Inc. The power steering is in operation at all times and is handled with an automotive-type steering wheel rather than with a steering lever. The clutch is located outside, for easy adjustment.

Portability is accomplished with a pair of rubber-tire trailing wheels which are hydraulically lifted 5 inches above the rolling surface when the roller is in operation. According to the company, the wheels may be removed from the roller quickly and easily to permit the closest possible rolling next to buildings, curbs, etc.

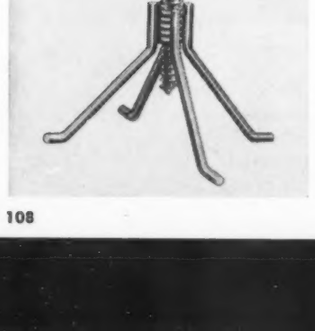
For further information write to Littleford Bros., Inc., Dept. C&E, 453 E. Pearl St., Cincinnati 2, Ohio, or use the Request Card at page 18. Circle No. 85.

Re-usable screed chairs in variety of sizes

The Dayton Sure-Grip & Shore Co. offers a complete line of re-usable screed chairs for use on any thickness of concrete slab and on any type of construction.

Adjustable screed supports come in four standard sizes, ranging from 1½ to 5 inches in height. These can be used for slabs from 2¾ to 11¼ inches thick. Special-length pipe holders can be obtained for thicker slabs.

For further information write to The Dayton Sure-Grip & Shore Co., Dept. C&E, 303 Kercher St., Miamisburg, Ohio, or use the Request Card at page 18. Circle No. 27.



Offer spray machine for concrete curing

A new concrete-curing-compound spray machine is announced by Concrete Machinery Ltd.

According to the company, the angle of the spray stroke is pre-set and its speed automatically synchronized with the forward speed of the machine to produce a spray pattern that is accurately perpendicular to the side forms. At the end of each stroke the angle of the spray stroke is automatically reversed to maintain a spray path even with the previous one.

The angle of wheels on both sides of the machine can be adjusted instantly while in motion to steer the rig against drifting off side forms on super-elevated curves, or when operating with rubber tires on pavement.

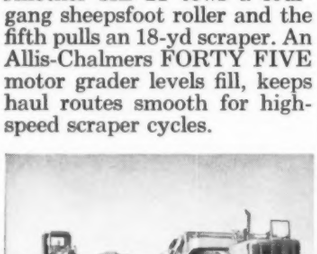
Travel speed is variable up to 1[illegible] fpm. Width of the standard model is adjustable from 24 to 25 feet. Special sizes reportedly can be produced to any width up to 36 feet.

For further information write to Concrete Machinery Ltd., Dept. C&E, 9530 E. Rush St., El Monte, Calif., or use the Request Card at page 18. Circle No. 84.

A SURE-FIRE SUCCESS FORMULA!

The Cunningham Construction Company is proud of its reputation for high-production earth moving. Says Don Cunningham: "The combination of Allis-Chalmers' productive machines and a first-rate operating crew, teamed with the excellent service our dealer provides, amounts to *an unbeatable formula for sure profits in this industry*."

The equipment spread includes four Allis-Chalmers motor scrapers—two TS-360's and two TS-260's—plus five turbocharged HD-21 crawler tractors. Two of the tractors are used as pushers, one as a dozer. Another HD-21 tows a four-gang sheepsfoot roller and the fifth pulls an 18-yd scraper. An Allis-Chalmers FORTY FIVE motor grader levels fill, keeps haul routes smooth for high-speed scraper cycles.



Big 120-horsepower FORTY FIVE motor grader blades fill at dam site, keeps pace with fast-moving equipment like the 20-yard TS-360 motor scraper at right.

The flood control job consists of building two dams and diversion dikes, moving an estimated 325,000 cu yd in the Dona Ana area north of Las Cruces, New Mexico. Working a 54-hour week, the 10-man crew moved nearly 200,000 yd in the first 4½ weeks. This impressive volume brought construction people from all over Texas and New Mexico to see the spread in action.

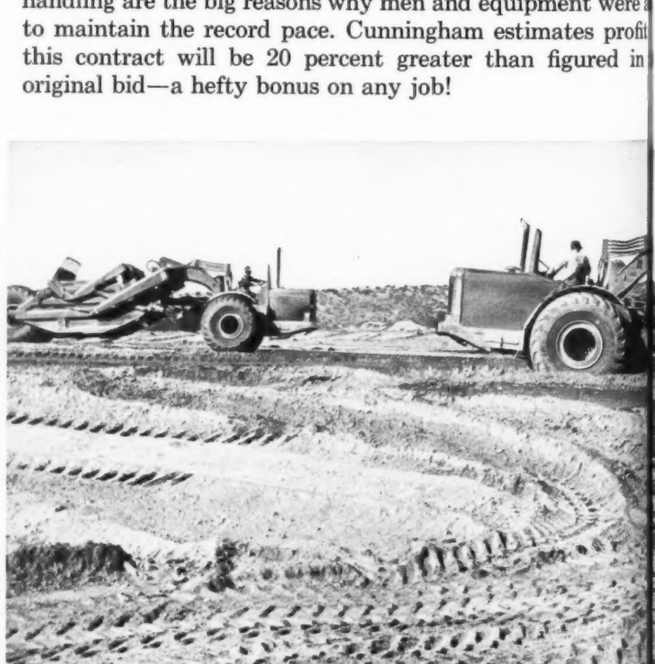
Don Cunningham, veteran of more than 30 years in earth moving, points out that such performance is a powerful factor in bringing in more construction jobs.

They cut 6-flood control jo to

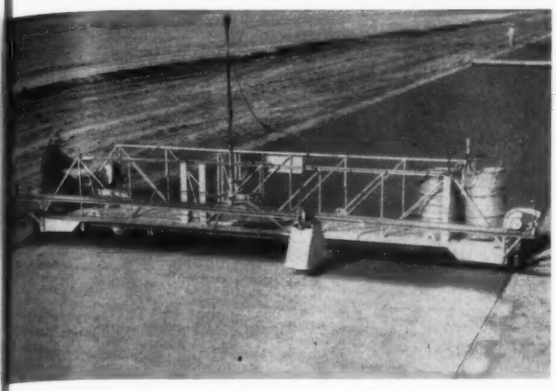
with Allis-Chalmers construction machine

Don Cunningham Construction Co.—with a crack crew an fleet of Allis-Chalmers construction machines—have set an standing record on a New Mexico soil conservation job. T completed a flood control project scheduled for 180 days in It involved 325,000 yd of earth fill.

Don Cunningham gives major credit to his Allis-Chalm fleet—motor scrapers, crawler tractors and motor grader. H convinced that top machine availability and extreme eas handling are the big reasons why men and equipment were a to maintain the record pace. Cunningham estimates profit this contract will be 20 percent greater than figured in original bid—a hefty bonus on any job!



Look ahead... *move ahead*...and stay ahe th



◄ This new curing machine automatically synchronizes the spray stroke with the forward motion of the machine for a uniform spray pattern.

New impact wrench is hydraulically operated

A hydraulically operated impact wrench is announced by the Owatonna Tool Co.

Having a 1-inch-square drive, and exerting up to 1,000 foot-pounds of torque, this new wrench is designed to operate from the hydraulic take-off on the new OTC Trackmaster hydraulic track press, thus eliminating the need for an air compressor or an electric power source. However, any hydraulic power source up to 6.5 gpm at 1,000 psi, which gives about 1,200 impacts per minute, can be used. Free speed is 650 to 700 rpm.

A single control handle governs the operation of the wrench.

For further information write to the Owatonna Tool Co., Dept. C&E, 381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 76.

Liquid chemical additive for all concrete mixes

A new liquid chemical additive said to increase the durability and water resistance, as well as accelerate the hardening action, of concrete and mortar is announced by the Building Products Division of the Sika Chemical Corp.

Use of Sika-Set, the company points out, permits forms to be stripped sooner and re-used more frequently.

In addition, the optimum quantity of air entrained by Sika-Set reportedly improves placeability and increases frost resistance.

For further information write to the Sika Chemical Corp., Building Products Division, Dept. C&E, 35 Gregory Ave., Passaic, N. J., or use the Request Card at page 18. Circle No. 131.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the Request Card at page 18.

New method for measuring irregular areas on maps

Areagraph, a new device for measuring, quickly and accurately, irregularly shaped areas on maps, drawings, charts, photographs, and plane objects, is available from the Charles Bruning Co., Inc.

The Areagraph overlay—a transparent film printed with a pattern of grids and dots—is placed over the area to be measured. The dots falling within the area are counted and then divided by a simple factor printed on the overlay. The answer is given in square inches.

The overlays are available in sets of three, one chart for each of three predetermined degrees of accuracy—85, 90, and 97 per cent.

For further information write to the Charles Bruning Co., Inc., Dept. C&E, 1800 W. Central Road, Mt. Prospect, Ill., or use the Request Card at page 18. Circle No. 40.

6-month to 2½

Don Cunningham
El Paso, Texas

Four Allis-Chalmers motor scrapers, push-loaded by 225-horsepower turbo-charged, torque converter-equipped HD-21's, moved nearly a quarter of a million yards the first month, helped boost profits 20 percent for the whole job.

PREVENTIVE MAINTENANCE PAYS OFF AGAIN!

Chief mechanic, "Snuffy" Oliver, and his assistant have an effective preventive maintenance program, including daily inspection of tracks, fan belts, blowers, turbochargers, cables, clutches.

This regular maintenance keeps Cunningham's Allis-Chalmers fleet in first-class condition. Daily lubrication, servicing and inspection requires about 20 minutes a day for each machine. No other time was lost during the nine-hour working shift.

Compacting scraper-hauled fill, big HD-21 crawler tractor tows four-gang sheepsfoot roller.

The easy-service design of Allis-Chalmers crawler tractors, motor scrapers and motor graders speeds the preventive maintenance routine. For example, truck wheels, idlers and support rollers need lubrication only once every 1,000 operating hours. Time-saving convenience like this keeps every machine ready for action.

Whether your operations call for one unit or a fleet, you can get high production like this. Your Allis-Chalmers dealer will recommend the right equipment for your jobs—from a complete line of up-to-the-minute construction machinery. See him now and ask for a demonstration on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee, Wisconsin.

ALLIS-CHALMERS

For more facts, use Request Card at page 18 and circle No. 293

With capacities ranging from 6½ to 8 tons, the new Gar Wood twin-cylinder underbody telescopic hoists feature short stroke design, with only one moving sleeve section.

Telescopic-hoist series has 6½ to 8-ton range

Gar Wood Industries, Inc., announces a new line of twin-cylinder underbody telescopic hoists.

With capacities ranging from 6½ to 8 tons, the TA and TR series of hoists features short stroke design, with only one moving sleeve section. According to Gar Wood, the units provide exceptional stability, even when dumping on rough ground. The lightweight design also results in greater payloads per trip and lower gasoline consumption, the company reports.

Another feature of the new telescopics is a full circulating hydraulic system that prevents excessive oil pressure without use of a relief valve.

For further information write to Gar Wood Industries, Inc., Dept. C&E, 36253 Michigan Ave., Wayne, Mich., or use the Request Card at page 18. Circle No. 10.

MINIMIZE HAULAGE COSTS WITH CYANAMID EXPLOSIVES!

For over-all economy, you just can't beat Cyanamid's complete line of highest quality explosives. You achieve maximum efficiency from every Cyanamid blast . . . your rock is fragmented for easy loading and hauling!

Cyanamid's trained technical staff has years of practical field experience to put at your service in working out special blasting problems. They will be glad to show you how Cyanamid's quality blasting materials can help you get more for your blasting dollar. For expert assistance and quick delivery to your site, call your Cyanamid representative, or write to

CYANAMID
AMERICAN CYANAMID COMPANY
Explosives and Mining Chemicals Department
30 Rockefeller Plaza, New York 20, New York

DISTRICT SALES OFFICES: St. Louis, Missouri • New York City, New York • Latrobe, Pennsylvania • Pottsville, Pennsylvania • Scranton, Pennsylvania Dallas, Texas • Salt Lake City, Utah • Bluefield, West Virginia. THE CYANAMID LINE: High Explosives • Permissibles • Seismograph Explosives Blasting Agents • Blasting Powder • Blasting Caps • Electric Blasting Caps • Blasting Accessories

For more facts, use Request Card at page 18 and circle No. 294

Silicone water repellent reduces highway spalling

A silicone resin specifically designed to reduce spalling of concrete bridges and highways is announced by the Union Carbide Corp.

Designated Spallbar water repellent, the solution may be used on highways as soon as the concrete has set sufficiently to support the weight of spraying equipment. It may be applied at temperatures varying above 15 degrees F.

Because it is not water soluble, Spallbar is better able to resist loss in repellency from rain. Other advantages are its resistance to freeze-thaw tests and alkalies. Also, Spallbar repellent employs a solvent of low volatility and high flash point, thus minimizing the hazards of toxicity and combustion.

For further information write to the Union Carbide Corp., Silicones Division, Dept. C&E, 30 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 114.

New features added on earth-boring units

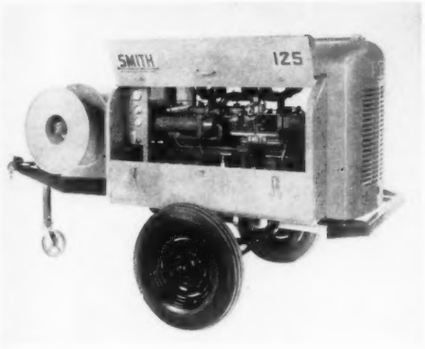
Several new improvements on its earth-boring machines are announced by the Highway Trailer Co.

Heavy-duty adjustable clutches are now standard equipment on all models; the number of plates has been increased from six to eight, which is said to provide an additional 33⅓ per cent more clutch. Improved linkage on the shifter shaft allows the operator to exert 45 per cent more pressure on the manual controls. Shifter shafts have been changed from 1-inch diameter, keyed, to 1¼-inch diameter, splined, eliminating breakage when this greater pressure is exerted.

These new clutches also enable Highway to offer integral winches on all models of their machines.

For further information write to the Highway Trailer Co., Dept. C&E, 405 E. Fulton St., Edgerton, Wis., or use the Request Card at page 18. Circle No. 111.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.



New air compressor has 125-cfm capacity

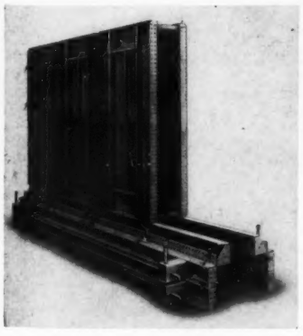
An air compressor with a capacity of 125 cfm at 1,165 rpm is offered by Gordon Smith & Co., Inc.

Among the standard equipment features of the Model 125 are a heavy-duty 12-volt electrical system with an extra large positive shift starter for quick starts in cold weather; modern downdraft carburetion system and quiet automotive-type exhaust; large concentric disk-type compressor valves located directly over the cylinder bores; water-cooled aftercooler; and a regulator to control the governed speed of the compressor proportional to the air being used.

For further information write to Gordon Smith & Co., Inc., Dept. C&E, 483 College St., Bowling Green, Ky., or use the Request Card at page 18. Circle No. 102.

Wall footing, sidewalk forms handle many jobs

Concrete footings and foundation walls may be poured at the same time through the use of the Economy Forms Corp.'s new wall footing and sidewalk forms, combined with regular EFCO form equipment. Where a



concrete footing has already been poured, these forms may also be used as a base for wall forms.

In addition to the above uses, the new EFCO forms are designed for use as sidewalk or as slab edge forms.

Standard height of the all-steel units is 4 inches; lengths are 96, 48, 24, and 12 inches.

Multiple sections may be clamped together horizontally with regular EFCO plate clamps to obtain thicknesses greater than 4 inches.

For further information write to the Economy Forms Corp., Dept. C&E, Box 128, Highland Park Station, Des Moines, Iowa, or use the Request Card at page 18. Circle No. 24.

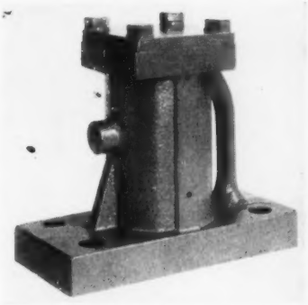
Bin and hopper vibrator has one-piece design

A one-piece bin and hopper pneumatic vibrator is announced by the National Air Vibrator Co.

Designed to eliminate body assembly bolts and housing springs, the unit is said to have an integral striking plate that cannot separate and leak air.

The Navco Binmaster line features five different piston sizes, from 1¼ to 4 inches. The units are suited to a variety of bin, hopper, chute, railroad car, and batching applications.

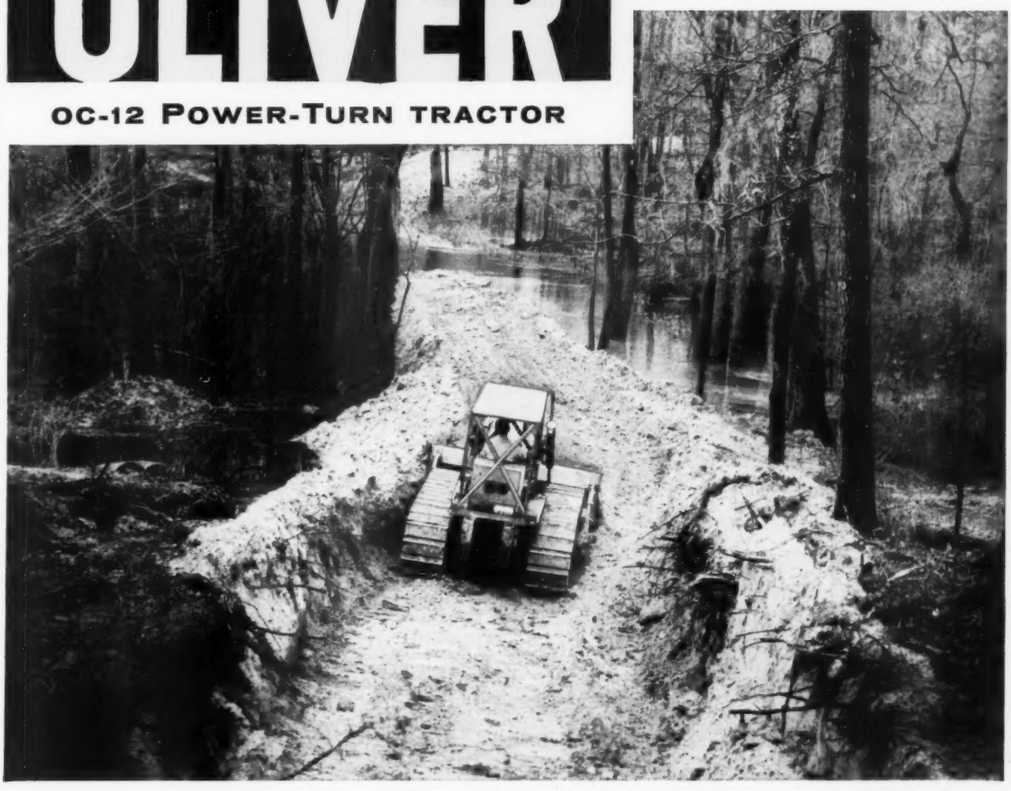
For further information write to



the National Air Vibrator Co., Dept. C&E, 2372 W. Seventh St., Cleveland 13, Ohio, or use the Request Card at page 18. Circle No. 155.

OLIVER

OC-12 POWER-TURN TRACTOR



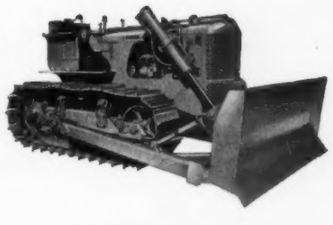
"Like it better than any tractor I've ever owned."

Florida contractor says of OC-12

Building this access road through some tough, semi-swamp land in Columbia County provided a good test for the OC-12—and a real comparison of performance with other tractors. "And I've owned and used all of them," said Sam H. Noland, head of the contracting firm that bears his name in Lake City, Florida.

"Other tractors that worked in this area bogged down and had to be pulled out. The Oliver can wade deeper without getting stuck. This tractor is easier to turn and maneuver. The hydraulic system is more powerful; I like the way we can raise the Oliver's blade higher than on other tractors."

Mr. Noland also talks about economy. "We use about 4 to 5 gallons of fuel handling heavy work where other tractors doing even lighter work use from 7 to 8 gallons." Yes, Oliver's super torque diesel delivers the lowest operating costs for any tractor of its size. Get the facts. Ask your Oliver distributor to demonstrate an OC-12.



OC-12 POWER TURN TRACTOR

Two separate yet connected systems of control enable you to make either sharp or gradual turns with *full power on both tracks at all times*—a tremendous competitive operating advantage. The OC-12 is available with either gas or diesel engine. Ask for literature.

THE OLIVER CORPORATION

Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio

a complete line of industrial wheel and crawler tractors and matched allied equipment

For more facts, use Request Card at page 18 and circle No. 295

Made of ¾-inch steel tubing, the Saf-T-Boom is designed to withstand steady contact with up to 30,000 volts, without any leakage of current into the boom itself.

Crane guard eliminates high-voltage line hazard

A safety device for cranes, said to eliminate the hazard of accidental contact with high-voltage lines, is announced by Saf-T-Boom Corp.

Called Saf-T-Boom, the unit is described as a dielectric guard, and reportedly can withstand steady contact with 30,000 volts without leakage of current.

The device is made of ¾-inch steel tubing, and is equipped with four General Electric 15-kv insulators capable of withstanding a 5,000-pound drop test. Installation takes about ten minutes, according to the company, and the unit does not affect crane operation or the view of the operator.

For further information write to Saf-T-Boom Corp., Dept. C&E, 422 Pyramid Bldg., Little Rock, Ark., or use the Request Card at page 18. Circle No. 47.

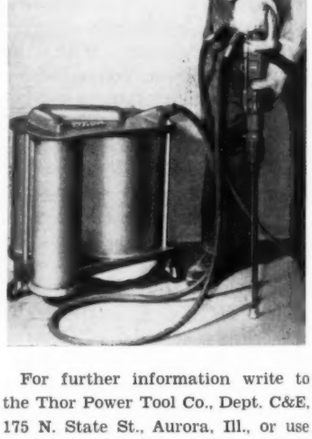
Utility drill features dustless operation

A new air hammer, said to eliminate dust problems when drilling concrete, brick, plaster, and other masonry, is announced by the Thor Power Tool Co.

The new "inhaling" hammer, designated No. 15-DL dustless utility drill, sucks in drilling dust through hollow drilling steel; the dust then moves out through ports in the back head of the tool, into special dust-extracting tanks.

The No. 15-DL is a modification of the Thor No. 15 utility air hammer, and is offered with special hollow steels and bits from 7/8 inch through 1 3/8 inches.

The new air drill is teamed with the Thor No. 50 dust extractor, which consists of three durable plastic dust-collecting and air-filter tanks mounted on a caster-wheeled cart for easy mobility.



For further information write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 3.

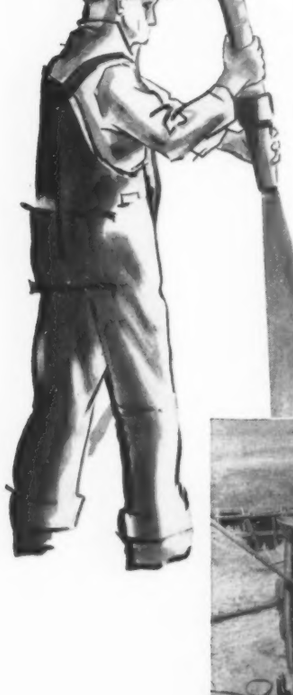
Tire-service truck crane handles heavy rubber

A hydraulically powered crane said to be an especially handy unit on tire-service trucks is offered by the Thiele Body Co.

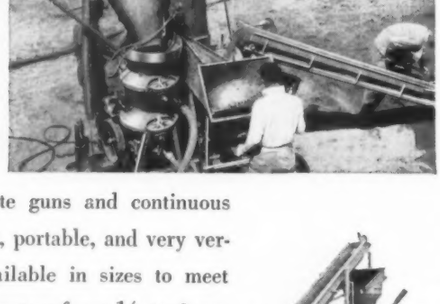
Designated Akron Airdraulic-Crane, the unit lifts tires weighing more than three tons. Operated pneumatically, the crane has a 360-degree free swing,

Another AIRPLACO Concrete Landmark

Airplaco Guns Set The Pace For The New "Air-Placed Concrete Era"



Swimming pools in Massachusetts and California; irrigation ditches in Kansas and Colorado; curb repairs and road maintenance in West Virginia and Washington... all over America AIRPLACO concrete guns are creating new construction landmarks (and repairing old ones), efficiently and economically.



AIRPLACO concrete guns and continuous mixers are compact, portable, and very versatile. They're available in sizes to meet every job requirement — from ½ to 8 cu. yards per hour production. You can start now creating new AIRPLACO concrete landmarks, and making bigger profits . . . just write for our FREE catalog or visit your equipment distributor.

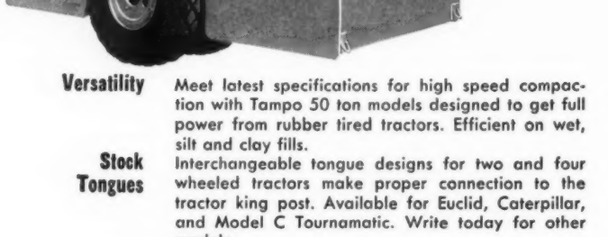
AIRPLACO® AIR PLACEMENT EQUIPMENT CO.

1007 WEST 24TH ST. • KANSAS CITY 8, MO.

MANUFACTURERS OF ADVANCED DESIGN CONCRETE GUNNING, MIXING, GROUTING AND SANDBLASTING EQUIPMENT.

For more facts, use Request Card at page 18 and circle No. 296

PULL IT WITH RUBBER!



Versatility Meet latest specifications for high speed compaction with Tampo 50 ton models designed to get full power from rubber tired tractors. Efficient on wet, silt and clay fills.

Stock Tongues Interchangeable tongue designs for two and four wheeled tractors make proper connection to the tractor king post. Available for Euclid, Caterpillar, and Model C Tournamatic. Write today for other models.

Wheel oscillation gives equal pressure and kneading action. Tire air pressures from 90 to 150 psi compact soft spots and voids.

TAMPO MANUFACTURING COMPANY

DEPT. 5 • P. O. BOX 2340 • 1146 W. LAUREL ST.

SAN ANTONIO, TEXAS • PHONE: PE-3-9171

For more facts, use Request Card at page 18 and circle No. 297

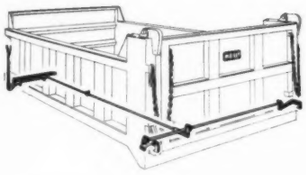
The pneumatically operated crane, shown in use on B. F. Goodrich's tire-service truck, has a capacity of more than three tons. The unit may be operated at the crane itself, by hand, or at a distance.

and can load from side and back. It requires only 18 square inches mounting space. The crane is powered by an air motor (connected to the air line with a quick coupler). It is actuated by a chain fastened to the throttle at one end and to the base of the crane at the other.

The new unit may be operated at the crane itself, by hand, or at a distance. In the latter case, operators need only to fasten an extension chain to the center of the throttle chain. The speed of retraction and extension can be regulated by closing or opening a valve.

For further information write to the Thiele Body Co., Dept. C&E, Johnstown, Pa., or use the Request Card at page 18. Circle No. 112.

Heavy-duty dump body has new tail-gate control



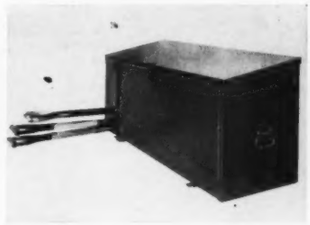
The Heil Co. announces a truck body with a new type of positive-acting control for the tail-gate hooks.

This new operating device is controlled by a lever handle at the front left corner of the body. When the handle is pulled forward and down, it actuates a single long rod which rotates the shaft on which the tail-gate hooks are eccentrically fastened. The design of these hooks, and the brackets within which they operate, reportedly prevents jamming of the operating device and affords positive control of the tail gate by the dump-truck operator.

The body, designated H-11, features heavy-duty construction throughout. It is designed for use with Heil twin-cylinder hydraulic dumping hoists.

For further information write to The Heil Co., Dept. C&E, 3003 W. Montana Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 106.

Offer heavy steel chest for tools, equipment



An all-welded 18-gage steel tool chest for storage of tools, equipment, change of clothing, and extra stock for job-site workmen is offered by the Scott-Rice Co.

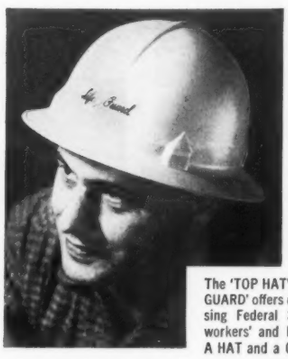
Designated Elmers tool chest, the unit is available in two sizes. An extended flanged sloping top provides complete weather protection. Optional is a steel slot for "handle" tools, permitting storage of six tools which cannot be removed when the top is locked.

Angle irons for stilt mounting to allow full truck-bed capacity are available.

For further information write to the Scott-Rice Co., Dept. C&E, 610 S. Main St., Tulsa, Okla., or use the Request Card at page 18. Circle No. 59.

Jackson FIBER GLASS HATS and CAPS surpass all Federal tests for construction workers' safety hats. In eight standard colors, others in quantities.

COMBINATIONS of Safety Caps available with welding helmets, goggles, face shields.



The 'TOP HAT' for Safety . . . Jackson's 'LIFE GUARD' offers unequaled protection by surpassing Federal Specifications for construction workers' and Edison Institute tests as well. A HAT and a CAP in white, yellow, and grey.

The Jackson 'ALUMIHAT' complies with Federal Specifications except electrical resistance. Heat-treated aluminum, with soft satin finish.

tops

• TOPS IN COMFORT

To men who wear safety hats all day long, comfort is important. Jackson hats and caps fit well and bear smoothly and evenly on the head.

See how little it takes to fit the headband to clearly marked hat sizes. And, being easy to fit, men will fit these hats accurately, so they stay on better in windy weather. Chin straps and winter-liners are also available.

The polyethylene headband is smooth and flexible, yet firm enough to hold its shape. A soft-backed leatherette sweatband fits all around.

• TOPS IN STYLE

They protect without looking bulky and have a well designed, uncluttered look. Easy to clean, they keep their shiny, smooth finish.

• TOPS IN SAFETY

Thorough comparative testing against published industry-accepted standards proved that Jackson's three types of safety hats, each in its own class, offer an extra margin of safety. They should be your choice.

Jackson Products

AIR REDUCTION SALES CO., A DIVISION OF AIR REDUCTION CO., INC.

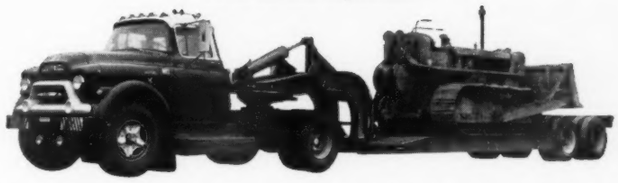
31739 Mound Road, Warren, Michigan

Sold through Welding Supply and Safety Dealers

For more facts, use Request Card at page 18 and circle No. 298

TIME AND MONEY SAVERS... BY Dorsey

Removable Gooseneck
Model RG
15 to 35-ton capacities



Dorsey's patented hydraulic system makes one-man operation a practical reality, which means a driver can load and deliver self-propelled equipment without assistance.

A self-contained hydraulic power unit is now standard on the RG. It can be pulled by any tractor.

20" tires and full spring tandems are also standard, making RG ideal for highway operations as well as on rough terrain.

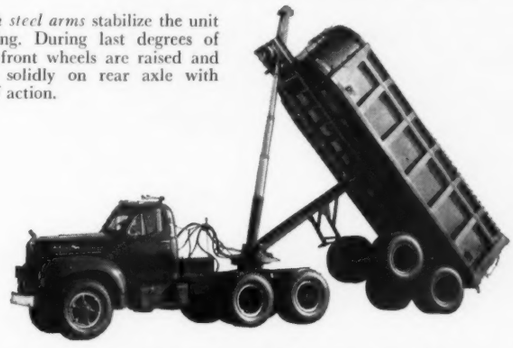
Deck can be raised or lowered while loaded and in transit to pass over or under obstructions.

New Dorsey
HYDRAULIC DUMP TRAILER

Frameless design adds thousands of pounds of payload capacity to the Dorsey Dump Trailer, and it's ruggedly built to stand up under the extra tonnage it can haul.

Heavy-duty telescopic hoist is placed at the extreme front to utilize the tilt principle instead of lift, reducing strain and wear on hoist and hydraulic system.

High-strength steel arms stabilize the unit when dumping. During last degrees of lift, tandem front wheels are raised and weight rests solidly on rear axle with springs out of action.

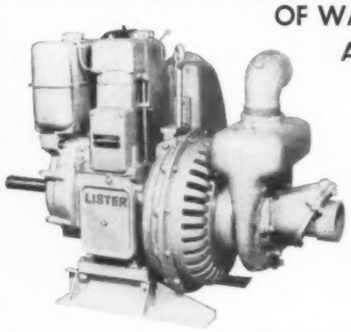


For the full details on any of Dorsey's complete line of heavy-duty trailers, call your Dorsey Low Bed Distributor or write direct.

DORSEY TRAILERS
ELBA, ALABAMA

For more facts, use Request Card at page 18 and circle No. 299

PROVED ECONOMY!! 10,000 GALS. OF WATER DELIVERED FOR A FUEL COST OF ONLY ONE CENT



AIR-COOLED DIESELS FROM 3½ TO 30 BHP

Specify LISTER For All Your Power Requirements

3" PUMPING SET WITH LISTER AIR-COOLED DIESEL, BUILT BY EMPIRE CORP., MILWAUKEE, WIS.

LISTER-BLACKSTONE, Inc.

42-32 21st St., Long Island City 1, N.Y., Tel.: STillwell 6-8202

In Canada: Canadian Lister-Blackstone, Ltd., 1921 Eglinton Av., E., Toronto 13, Ont.

For more facts, use Request Card at page 18 and circle No. 300

Product Parade

On this 50-ton-capacity Perfection unit, the conventional trailer frame has been eliminated, providing an additional 2,000 pounds of legal payload.

Frameless dump trailer hauls 50-ton payload

A 32-foot-long, 50-ton-capacity, frameless dump trailer body is offered by the Perfection Steel Body Co. Other dimensions include an 84-inch width and 60-inch sides.

The body design is said to permit an additional 2,000 pounds of legal payload.

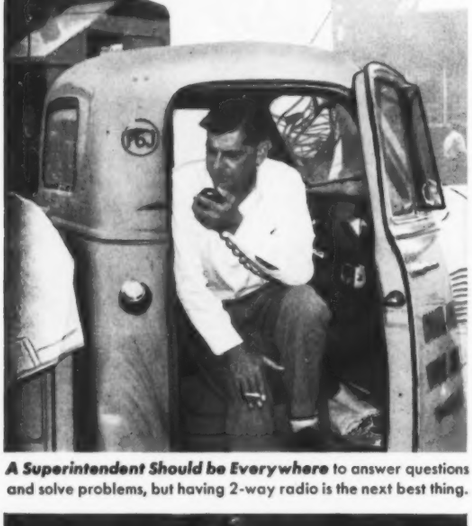
Two front-mounted Perfection Micro-Tel hoists are placed side by side. The total length of the hoists when extended gives each a height of 282 inches. Mounting the hoists on a common center assures equal pressures to both hoists, the manufacturer states.

For further information write to the Perfection Steel Body Co., Dept. C&E, Galion, Ohio, or use the Request Card at page 18. Circle No. 37.

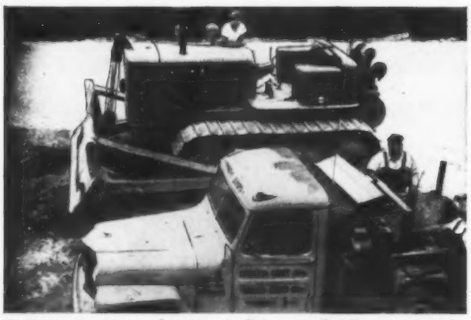
To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

CORBETTA-YONKERS JOINT VENTURE

Stops profit leaks with radio



A Superintendent Should be Everywhere to answer questions and solve problems, but having 2-way radio is the next best thing.



It Costs Money to have a Bulldozer Idle! These mechanics arrived minutes after the breakdown because they were called by radio.

When you've bid on and received the contract for a construction project, every dollar you save goes towards *profits*. That's why the joint venture of Corbetta Construction Co., New York City, and the Yonkers Contracting Co., Yonkers, N.Y., on a three-mile stretch of the New York Thruway, depends so much on its Motorola 2-way radio system.

With about 450 men on the job, using approximately 250 pieces of major equipment to build 8 bridges and miles of retaining walls, as well as the main highway, there are many opportunities to save money with radio.

For example: when a truck, dozer, loader, drag line or shovel breaks down, every minute of delay in getting a crew to fix it costs money for machine and operator, and delays the project. But, with Motorola 2-way radio, it takes only *seconds* for a superintendent to contact a mechanic and have help on the way.

160 Calls per Day reports the base station dispatcher.

Or, if lack of a compressor is holding up an important job, it takes just a few minutes to contact everyone using compressors and find out who can spare one. There may be a question about the location of a utility line. Are the utilities superintendent's drawings up to date? There's no danger of a major mistake when he can pick up his microphone and call field headquarters for the answer.

Planning the next day's work is fast and easy. Just hold a conference over the Motorola radio and save hours of expensive supervisory time. Or when you are pouring concrete. Where is it needed? How much more is wanted? No difficulty getting the answers via radio . . . one man can take care of it.

Just a few of the ways in which Corbetta Yonkers cuts costs, increases profits with Motorola 2-way radio. Learn how you, too, can increase profits on your next job. Write, phone or wire: Motorola Communications & Electronics, Inc., Construction Department.

MOTOROLA

2-WAY RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC.
A SUBSIDIARY OF MOTOROLA, INC.
4501 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS

Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering...product...customer service...parts...installation...maintenance...finance...lease.
"The best costs you less—specify Motorola."

For more facts, use Request Card at page 18 and circle No. 301

GOT THIS?
(Predraining Problem)

GET THIS!
(Skilled Wellpoint Engineering)

From

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
West Palm Beach, Fla.

For more facts, circle No. 302

The 250-cfm-capacity Schramm Pneumatractor moves about the job under its own power.

Self-propelled compressor has capacity of 250 cfm

A new self-propelled air compressor that furnishes 250 cfm of air at 100 psi is announced by Schramm, Inc.

Designated Model 250 Pneumatractor, the unit is available with either gas or diesel power. It reportedly will operate three heavy rock drills or six paving breakers, or large drifter, wagon drill, or self-contained and mounted-on drifter. The Model 250 can be furnished with a front-end winch for added moving power or pulling, a rotary brush for cleaning operations, or a snowplow blade.

For further information write to Schramm, Inc., Dept. C&E, 900 E. Virginia Ave., West Chester, Pa., or use the Request Card at page 18. Circle No. 101.

Boost tractor traction with new attachment

A Traction Booster attachment for the Caterpillar DW20 (Series E and later) tractor is announced by the Athey Products Corp. This device is designed to provide additional traction on the drive wheels of the tractor by transferring weight from the tractor steering axle and from the trailing unit axle.

Mounted on each side of the tractor between the hitch and the tractor chassis, the booster is hydraulically controlled by the operator through a simple one-lever valve. It comprises an independent hydraulic system with an accumulator which permits nominal movement of the hitch.

For further information write to the Athey Products Corp., Dept. C&E, 5631 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 33.

With the Athey Traction Booster, tractor tire wear is said to be reduced by elimination of wheel slip, and the unit enabled to operate under more adverse conditions.

Campbell Cab for . . . "Caterpillar" D8 and D9 Tractors

HEAVY DUTY—all metal construction to withstand rugged work conditions.

FULL VISIBILITY—360° horizontal visibility.

SAFETY GLASS—windows throughout mounted in locking rubber channels minimizes vibration and breakage. Assures a weather-tight cab.

VENTILATION—doors on both sides of the cab can be locked open or removed for summer-time ventilation.

ENTRANCE & EXIT—two full doors, one on each side of the cab provide easy entrance and exit.

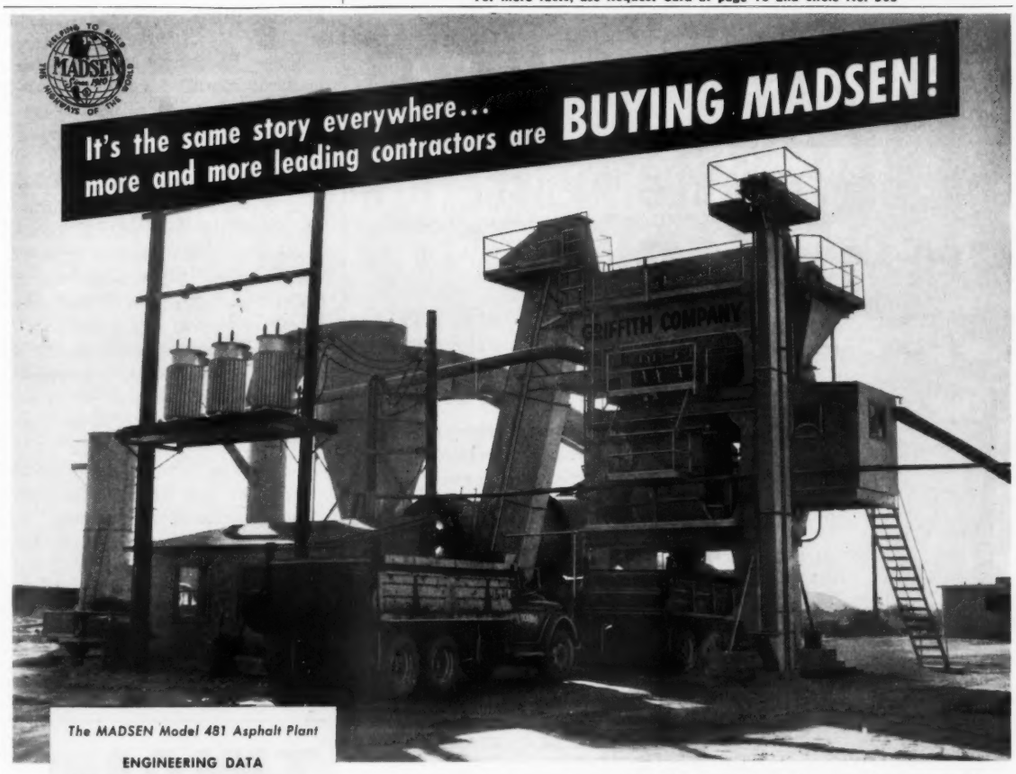
EMERGENCY ESCAPE HATCH—top panels inserted in rubber moulding can be knocked out from inside and used as an escape hatch in case of emergency.

Height .. 57"
Width .. 54"
Length .. 58½"

Easy to install—cab is installed by bolting to tractor fender and floor boards. Installation time—approximately 2½ hours.

CAMPBELL DETACHABLE CAB CO. • WAUCONDA, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 303



The MADSEN Model 481 Asphalt Plant

ENGINEERING DATA

PLANT SIZE—6000-lb. BATCH CAPACITY
MIXER—MADSEN MODEL 460 TWIN-SHAFT PUG MILL MIXER (Power—125 H.P. Electric Motor)
SCREEN—48" x 16' SYMONS 2-DECK WITH SPLIT DECK (Power—15 H.P. Electric Motor)
DRYER—MADSEN 96" x 30' COUNTER-FLOW DRYER (Power—75 H.P. Electric Motor)
DRYER BURNER—12" MAXON (low pressure) (Blower Power—75 H.P. Electric Motor)
DUST COLLECTOR—MADSEN 12' CYCLONE (Exhauster Power—125 H.P. Electric Motor)
WET TUBE DUST WASHER—MADSEN TRIPLE TUBE
TYPE OF FEED—TUNNEL CONVEYOR TO DRYER
MINERAL FILLER ELEVATOR AND SCREW

Wherever you go, you will see MADSEN Asphalt Plants serving successful contractors.

The increasing popularity of the MADSEN Model 481 Asphalt Plant is due to its versatility and outstanding production performance. The Model 481 may be set up as a permanent installation or if desired, screen-bin unit, mixer weigh-box section and hot stone elevator may be wheel-equipped at the factory or in the field for 100% portability. Fully automatic operation is optional. Some of the additional advantages of this popular plant are:

- CLEAN OPERATION (MEETS AIR POLLUTION REQUIREMENTS EVERYWHERE)
- FAST, PRECISION TIMING AND WEIGHING
- CENTRALLY LOCATED FINGER-TIP CONTROLS FOR BIN GATES, WEIGH-BOX, MIXER AND ASPHALT INJECTION SYSTEM
- OVERSIZE CONSTRUCTION THROUGHOUT INCLUDING LARGER ELEVATOR, SCREEN, BINS, WEIGHBOX, MIXER AND DRIVES
- MADSEN TWIN-SHAFT PUG MILL MIXER WITH EXTERNALLY REMOVABLE LINER SECTIONS
- MADSEN ROLL-AWAY WEIGHBOX FOR EASIER, FASTER MIXER MAINTENANCE

Whether you are an established operator or a new-comer in the asphalt business, you will find the MADSEN Model 481 (4000-lb., 5000-lb. or 6000-lb.) Asphalt Plant ideal for your needs.

North, South, East or West . . . There's a MADSEN Distributor near you to serve you. And, for your convenience MADSEN maintains a complete parts stock in Los Angeles and Lima, Ohio.

ESTABLISHED 1910 . . . THE OLDEST MANUFACTURER OF ASPHALT PLANTS IN THE WEST

MADSEN Equipment that Serves

Ask your MADSEN Distributor for Catalog No. 800-A or write MADSEN Works Baldwin-Lima-Hamilton Corporation P.O. Box 38, La Mirada, California

THE MADSEN LINE OF PRODUCTS FOR THE ASPHALT PAVING INDUSTRY

ASPHALT PAVING PLANTS • PUG MILL MIXERS • AGGREGATE DRYERS • DUST COLLECTOR UNITS
ROAD PUG TRAVEL-MIX PLANTS • WEIGH BATCHERS • SUPER FLOAT AND JOHNSON FLOAT FINISHERS
ASPHALT TANKS • ROYAL CROWN PUMP VALVES • ASPHALT AND FUEL PUMP UNITS

MADSEN WORKS
BALDWIN-LIMA-HAMILTON
CONSTRUCTION EQUIPMENT DIVISION
DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation • Hamilton • Lima • Loewy-Hydropress • Madsen • Pelton • Standard Steel Works

For more facts, use Request Card at page 18 and circle No. 304

The Case Model 420 loader reportedly can lift full 2,000-pound loads to clear an 11-foot 4-inch height in 7½ seconds, without spillage.

New loader features torque-converter drive

A new wheel-type loader with torque-converter drive is announced by the J. I. Case Co. Standard equipment also includes a self-leveling bucket, shuttle transmission, and full-time power steering.

Designated Model 420, the unit features a simple lock-out lever on the dash that permits operators to switch the unit from torque converter to direct drive while moving.

The machine is said to develop 4,600 pounds breakout force. The bucket is 63¾ inches wide, with a 25-degree rollback and full 90-degree forward roll at ground level.

For further information write to the J. I. Case Co., Dept. C&E, Racine, Wis., or use the Request Card at page 18. Circle No. 103.

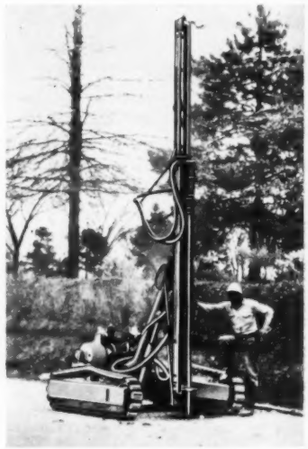
Heavy-duty drifter drill is interchangeable unit

A new heavy-duty Blue Brute 4-inch drifter drill with standard, neutral, and reverse rotation is announced by the Holyoke Division of the Worthington Corp.

While retaining all the basic features of Worthington's current drilling units, the new drill is interchangeable with drills now in service, including Worthington wagon drills, Port-A-Tracs, and hydraulic booms on tractors and trucks.

The company points out that this interchangeability results in economical conversion of existing equipment for rock drilling with sectional coupled steels.

For further information write to Contractors' Tool Sales, Worthington Corp., Dept. C&E, 37 Appleton St., Holyoke, Mass., or use the Request Card that is bound in at page 18 of this issue. Circle No. 121.



For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

MARVEL Synclinal FILTERS

FOR DEPENDABLE PROTECTION on Construction Industry's Hydraulic Equipment

LINE TYPE (Cutaway)

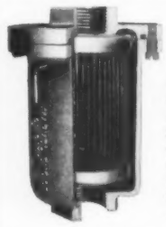
SUMP TYPE (Cutaway)

Hydraulic Oils MUST BE CLEAN

To Protect Equipment — Increase Production — Reduce Maintenance

CONSTRUCTION ENGINEERS and MAINTENANCE MEN, whose job it is to keep machinery operating at peak efficiency, are specifying Marvel Synclinal Filters on new equipment and standardizing with Marvel's on existing equipment.

OVER 800 Original Equipment Manufacturers install MARVEL SYNCLINAL FILTERS as standard equipment for dependable protection on all hydraulic and other low pressure circulating systems.



IN-LINE FILTER

Handles up to 25 G.P.M. of hydraulic oil at very low pressure drop. Monel wire cloth filtering media is available in mesh sizes from 30 to 100. Cartridge is easily removed for cleaning.

MEET J.I.C. STANDARDS

EASY TO CLEAN

Both sump and line types are easily disassembled, thoroughly cleaned and reassembled, on the spot, in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connections.

A SIZE FOR EVERY NEED

Sump or line type filters in capacities from 5 to 100 G.P.M. Greater capacities attained by multiple installation. Monel mesh, sizes 30 to 200.

IMMEDIATE DELIVERY

For further information, write, wire, phone or use coupon below.

MARVEL ENGINEERING COMPANY
7227 N. HAMLIN AVE.,
CHICAGO 45, ILLINOIS
Phone: JUNIPER 8-6023

Catalogs containing complete data available on request

Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated:

☐ Catalog #108—For Hydraulic Oils, Coolants, Lubricants
☐ Catalog #200—For Fire-resistant Hydraulic Fluids (Aqueous Base)
☐ Catalog #400—For Fire-resistant Hydraulic Fluids (Synthetic)
☐ Catalog #301—For Water

CE-8

Name .....
Company .....
Address .....
City .....
State .....

For more facts, use coupon

TRIAL SAMPLES

Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!

HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

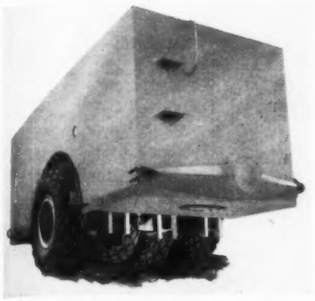
65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

• Open Gears, Dipper Sticks, Cams • Enclosed Gear Cases • Wire Rope and Cable
• Hydraulic Units, Torque Converters • Roller, Ball, and Sleeve Bearings • Speed Reducers

Est. 1893
THE WHITMORE MANUFACTURING CO.
LUBRICATING ENGINEERS
CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

For more facts, use Request Card at page 18 and circle No. 305

New wheel suspension for 50-ton roller



A 50-ton pneumatic roller featuring an improved wheel suspension is announced by the W. E. Grace Mfg. Co.

The Model Y-18 has its four wheels independently mounted, with the oscillation strictly vertical, permitting up to 6 inches of oscillation. Each wheel load is carried by a hydraulic cylinder. The four cylinders are manifolded together so that equal pressure as well as oscillation is provided over all four wheels.

For the occasional testing that requires large loads on one or two wheels, a valve arrangement permits placing the entire roller load on the two inside or the two outside wheels. A gage recessed in the side of the body shows the hydraulic pressure, and also shows the load directly in tons. In case specifications require it, or in case of hydraulic-hose failure, stops permit using the roller with four wheels in one plane giving the effect of a rigid axle roller.

For further information write to the W. E. Grace Mfg. Co., Dept. C&E, 6003 S. Lamar St., Dallas, Texas, or use the Request Card at page 18. Circle No. 19.

Diesel electric plant generates 3,000 watts

A new 3,000-watt air-cooled diesel electric generating plant, the Model DSL, is announced by D. W. Onan & Sons Inc. A special cooling system called Vacu-Flo is said to enable the plant to be installed in completely enclosed compartments, in a space just slightly larger than the unit and its accessories, with allowances for an air-intake and exhaust outlet.

Weighing only 470 pounds, the unit can be taken anywhere in its own high-speed trailer or can be installed easily in any pickup truck or other vehicle.

In addition to the standard voltages (115-volt; 115/230-volt; 60-cycle) the DSL plants can be obtained in 24 to 30-volt, 32 to 40-volt, and 110 to 140-volt battery-charging models. Fifty-cycle models, rated at 2,500 watts, are also available.

For further information write to D. W. Onan & Sons Inc., Dept. C&E, 2515 University Ave. S. E., Minneapolis 14, Minn., or use the card that is bound in at page 18 of this issue. Circle No. 36.

VULCAN

...the PILE EXTRACTORS you can depend on for

SPEED- jobs get done faster, better.

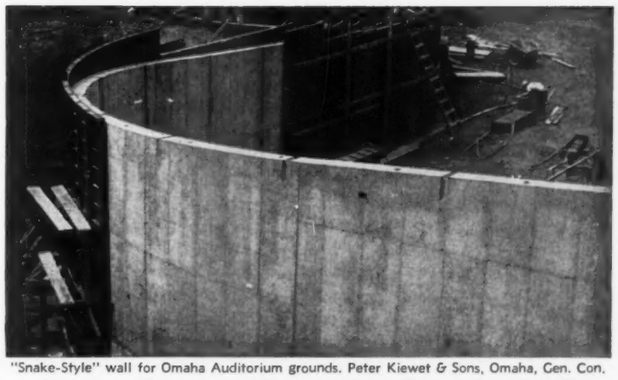
ECONOMY- efficient, balanced design, sturdy construction assures enduring economical performance.

EASY OPERATION- simple in design, it is easy to operate—pulls sheet steel, wood, concrete, H-beam and pipe piles with the greatest of ease.

Manufacturers of Pile Driving Hammers and Piling Extractors Since 1852

VULCAN IRON WORKS INC. 327 North Bell Avenue, Chicago, U.S.A.

For more facts, use Request Card at page 18 and circle No. 306



"Snake-Style" wall for Omaha Auditorium grounds. Peter Kiewet & Sons, Omaha, Gen. Con.

Symons Forms on Serpentine Retaining Wall

Symons Forms were used exclusively to form this serpentine retaining wall which is 20 feet high at the highest point and slopes to 8 feet high at the lowest point. These walls were constructed to facilitate parking on the ground of Omaha, Nebraska's new city auditorium. Symons Forms were used for 30,000 square feet of forming on this job.

Send plans for your next job and get complete layout and cost sheet—no obligation. Catalog F-10 sent FREE upon request. Symons Clamp & Mfg. Co., 4251 Diversey Avenue, Dept. H-8, Chicago 39, Illinois.

For more facts, use Request Card at page 18 and circle No. 307

BRAND NEW Barricade Flash!

the Big Beam TRANSISTA FLASH®

Model 410T

- **Transistor type, heavy duty for long, dependable life.**
- **No moving parts to get out of order.**
- **Two-directional head or 360° dome type Fresnel.**
- **Electronic flashing mechanism weatherproofed. Telescoping top and rubber gasket make battery case completely weatherproof.**
- **Acid-proof plastic liners prevent interior case corrosion.**

TRANSISTA FLASH produces approximately 2000 hours of continuous flashing from two standard 6-volt batteries, available anywhere. Provided with a concealed, tamper-proof switch operated from outside of case. Equipped with bracket for attaching to barricade. Lens or Fresnel supplied in either amber or red plastic—specify color. Flash frequency is approximately 72 times per minute. Lamp is finished in yellow baked enamel.

No. 433 Barricade—All metal, strong, stable on any surface. Has angle iron construction, closed ends.

Model 418T—with dome type Fresnel.

Model 417T—7 inch head. Otherwise, same as Model 410T.

Big Beam—makers of explosion-proof lamps, emergency lights, hand lamps and flares. 8393

U-C-LITE MFG. CO. 1024 West Hubbard Street Chicago 22, Illinois

Export Department: 201 N. Wells St., Chicago 6, Ill. Cable Address: ENOTS
In Canada: Bernard Marks & Co. Ltd., 70 Claremont St., Toronto 3, Ontario

For more facts, use Request Card at page 18 and circle No. 308

The new line of Anthony heavy-duty dump-truck bodies features horizontal side bracing for greater strength.

New dump bodies feature horizontal side bracing

A new line of heavy-duty dump-truck bodies is announced by the Anthony Co.

Both aluminum and steel bodies feature large horizontal box braces and slanted running boards. Sizes of the new bodies range from 9 to 15 feet in length, with capacities from 6 to 15 cubic yards, or more.

Teleramic telescopic hoists of either twin out-mount or single-head lift models are used to provide dumping action. The pump and valve of Teleramic hoists are contained in a single housing for better control, longer life, and easier servicing. The ends of each cylinder tube are reinforced with truss rings to prevent flaring.

For further information write to the Anthony Co., Dept. C&E, 1750 Baker St., Streator, Ill., or use the Request Card at page 18. Circle No. 26.

HOW TO BOOST DOZER PRODUCTION AS MUCH AS 50%

It's a fact — under many conditions, dozer production can be boosted as much as 50% simply by installing Preco Back-Rippers! You convert deadhead time into productive time by ripping as you back. And ripping loosens packed clay, shale, rock, overburden, or other hard materials so that you do a smoother, faster, dozing job, and get a full load with less power.

There's a size of Preco Back-Ripper to suit your needs — available for all sizes and types of bulldozers . . . straight, angling or U-dozers.

So, if you'd like to make your present tractor produce like the next size larger, see your Preco-Caterpillar Dealer today! Name the date for a demonstration. For literature, write Dept. 58, Preco Incorporated, 6300 East Slauson Ave., Los Angeles 22, California.

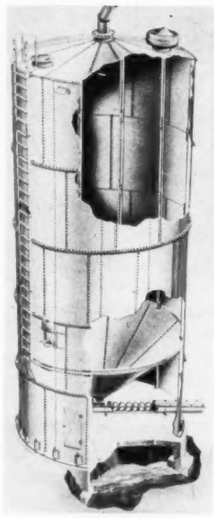
PRECO®

BACK-RIPPERS
AUTOMATIC BLADE CONTROLS

For more facts, use Request Card at page 18 and circle No. 309

Silos for cement storage hold up to 1,800 barrels

A new line of Kay Dee silos with capacities from 380 to 1,800 barrels is offered by Engineered Equipment, Inc., for the ground storage of cement or other free-flowing materials.



Offered in standard capacities from 380 to 1,800 barrels, Kay Dee silos are designed and preformed for quick field erection.

Larger capacities are available on special order.

Built of heavy-gage steel, Kay Dee silos are designed and preformed for quick field erection. They are built with cone roof, vent, and manhole with hinged cover and ladder, and are available in 12 and 15-foot diameters.

For further information write to Engineered Equipment, Inc., Dept. C&E, P. O. Box 207, Waterloo, Iowa, or use the Request Card at page 18. Circle No. 122.

BUY NOW AT TREMENDOUS SAVINGS!

GMC 6x6

UNUSED! FACTORY-NEW PERFORMANCE!

Save up to $3,000 on an unused Army 6x6 . . . *guaranteed* new-truck performance. **Rugged Front-Wheel Drive** . . . gives *extra* power when the going gets tough! **Tandem Rear Axle** . . . carries heaviest loads over roughest terrain on "off-road" jobs. **Delivered On Approval!**

For Specifications, prices, delivery write, wire or phone collect: JAckson 5-7841
MILTON Y. TOOMBS, JR., Sales Manager.

MEMPHIS EQUIPMENT Company
ARMY TRUCKS • PARTS
CONSTRUCTION EQUIPMENT
766 SO. THIRD STREET • MEMPHIS, TENNESSEE

For more facts, circle No. 310

are your bending methods up to date?

LEARN HOW OTHERS ARE DOING IT NOW

You will see how other people use ram — rotary — roll benders in their plants. 36 pages written *in layman's language* . . . with in-plant pictures. Also letters from users.

Write today for your free copy

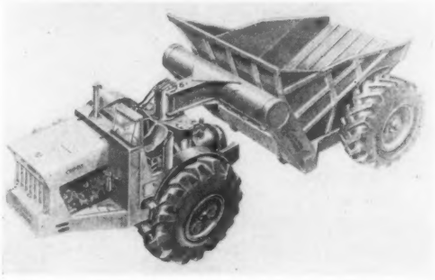
WALLACE SUPPLIES MFG. CO.
1808 W. Cornelia Ave. • Chicago 13, Illinois

For more facts, circle No. 311

Rear dumper lugs 35 tons at speeds past 30 mph

A high-speed heavy-duty rear dumper with a payload capacity of 35 tons is available from the Wooldridge Division of Continental Copper & Steel Industries, Inc.

Designated Model CWD-221, the 2-axle unit features a General Motors 375-hp engine that powers it to speeds



The Model CWD-221 has a 14-second dumping cycle, and the body raises to an angle of 65 degrees.

of more than 30 mph. It has four forward and two reverse speeds, and power steering is standard.

The dumping cycle for the CWD-221 is 14 seconds, the company reports, and the body can be raised to an angle of 65 degrees.

For further information write to Continental Copper & Steel Industries, Inc., Wooldridge Division, Dept. C&E, Sunnyvale, Calif., or use the Request Card at page 18. Circle No. 88.

Device shows truck-tire pressure at a glance

Miniature tire pressure gages, designed to be screwed onto the valve stem of each tire to show at a glance whether the tire has lost more air than is safe for proper operation, are offered by the Frebank Co.

Designated No-Lo indicators, the units feature a red-tipped pressure control rod which is visible as long

as the air is at a safe level. Drops in air pressure are indicated automatically by the red tip sliding back into the valve. The rod slides completely out of sight whenever air drops 6 or more pounds below the determined minimum.

The units are made in 5-pound increments, from 40 to 105 pounds, for truck tires; for lighter vehicles, in 2-pound increments, from 22 to 34 pounds.

Installation reportedly is simple, by hand, with no torque or balance problems involved.

For further information write to the Frebank Co., Dept. C&E, 711 W. Broadway, Glendale 4, Calif., or use the Request Card at page 18. Circle No. 137.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

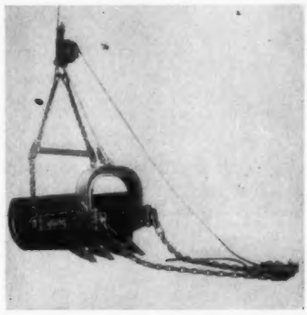
Dragline bucket offered in sizes up to 10 yards

A new dragline bucket with angled teeth for maximum penetration is available from Young Iron Works. The unit is designed with outside teeth mounted at the extreme corners of the bucket; this increases digging power by loosening the ground ahead of the bucket cutting edge.

Sealed Timken roller bearings are used in the dump block.

The bucket is offered in sizes from ⅜ cubic yard to 10 cubic yards, with or without perforations. Vertical pin hitch plates and extensions are also available.

For further information write to the Young Iron Works, Dept. C&E,



2959 First Ave. S., Seattle 4, Wash., or use the Request Card at page 18. Circle No. 146.

Want a strong drainage structure?

use Corrugated Metal

Corrugated Metal Drainage Structures are *flexible*. A flexible structure deflects under load and gains support from the "passive resistance" of the compressed soil around its sides. That's why it can stand the crushing weight of deep fill and the vibration and impact of heavy loads over shallow fill. Metal drainage products, excellent in all applications, are particularly suitable when the height of earth cover is shallow, or more than 25 feet—in fact, some specifying agencies *require* metal structures under these conditions.

Write for our free booklet "USS Culvert Sheets" which tells you how to get the kind of service you can expect from Metal Drainage Structures made from USS Galvanized Culvert Sheets. It's loaded with information about selection of correct structure sizes, preparing foundations and installation procedure. For your free copy, write to United States Steel Corporation, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

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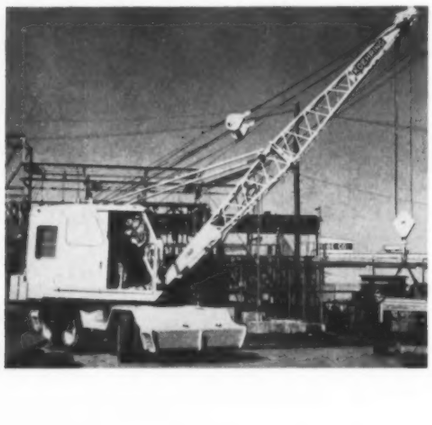


Fast crane service is offered by the Koehring 305 Cruiser. The unit also doubles as a clamshell or dragline.

Crane lifts 25 tons, travels up to 18 mph

Travel speeds up to 18 mph and a 25-ton lift capacity are features of the new Koehring 305 Cruiser crane. Easy roll-out outriggers have screw jacks and pedestals as standard equipment.

One man controls all operations while traveling or on the job.

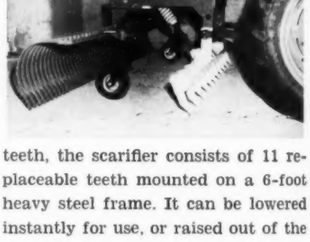
Booms up to 100 feet can be used on this 3-axle unit, with 15 to 30-foot jibs adding more reach for special high-lift crane service. Safety boom-limit stops are standard equipment, as is power boom lowering.

For further information write to the Koehring Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 29.

Scarifier attachment for landscaping rake

A scarifier attachment said to increase the efficiency and versatility of the York Model RE landscaping rake is available from the York Modern Corp.

Mounted just ahead of the rake



teeth, the scarifier consists of 11 replaceable teeth mounted on a 6-foot heavy steel frame. It can be lowered instantly for use, or raised out of the way when the rake is to be used alone. The teeth reportedly will penetrate up to 6 inches deep.

A single locking pin holds the scarifier in either up or down position.

For further information write to the York Modern Corp., Dept. C&E, Unadilla, N. Y., or use the Request Card at page 18. Circle No. 138.

Are You Having Compaction Problems?

BACKFILL SINKING? SLABS CRACKING?

. . . Eliminate with a Terrapac Vibratory Compactor!

IMPACT FORCE 2300 LBS.

IMPACT FORCE 3-1/3 TONS

TERRAPAC CM-15 TERRAPAC CM-20

Small, self-propelled, one-man operated, heavy-duty vibratory tampers now enable you to really compact crushed stone, sand, gravel, etc. without bringing in 10-20 ton static rollers. . . . They are also ideal for small asphalt jobs including patch work. . . . The CM-15 will compact lifts up to 12 inches, while the CM-20 penetrates up to 30 inches — in one or two passes. . . . Prove it to yourself — on your own job. . . . To arrange a demonstration, contact your local Vibro-Plus distributor or write to us direct.

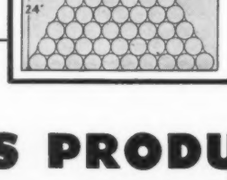
Ad 41-57

SPECIFICATIONS

	Impact	Frequency VPM	Travel Speed	Weight
CM-15	2300 lbs.	2350	up to 55′ per min.	242 lbs.
CM-20	6600 lbs.	2000	up to 75′ per min.	950 lbs.

CONVENTIONAL STATIC COMPACTION

Static rollers, relying on weight alone, produce friction forces between soil particles causing bridges to form. Terrapacs break bridges for deep compaction.



TERRAPAC DYNAMIC COMPACTION

Vibratory energy breaks frictional forces binding soil particles together, allows soil to sift down producing uniform densities at greater depths.

VIBRO-PLUS PRODUCTS, Inc.

STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES!

For more facts, use Request Card at page 18 and circle No. 312

FOUNDATION CONSTRUCTION

CAISSONS

DRILLED AND UNDERREAMED

PIERS

SPECIAL DRILLING PROBLEMS

Offices in Atlanta, Ga., Pittsburgh, Pa., Washington, D.C., Cleveland, Ohio

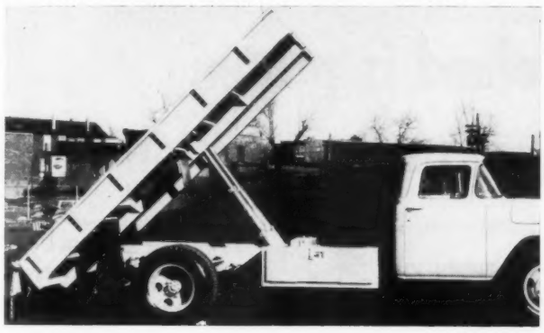
Wire or phone for a quotation on your next foundation job — ANYWHERE IN THE WORLD

McKINNEY DRILLING COMPANY

NACOGDOCHES, TEXAS

Ph.: LOgan 4-8373 • P. O. Box 190

For more facts, circle No. 313



The specially designed bodies are available in lengths up to 12 feet, and are offered with or without hoist.

New truck body designed to carry concrete forms

A truck body especially designed to carry building forms for the concrete contractor is offered by Jacob Press' Sons, Inc.

The low sides make for easy and quick loading and unloading. Bodies are available in 12-foot lengths or shorter, are of heavy-duty construction with heavy side bracing, and are available with or without hoist.

For further information write to Jacob Press' Sons, Inc., Dept. C&E, 501 W. 33rd St., Chicago 16, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 67.

Announce belt conveyor designed for flexibility

A new sectional belt conveyor is offered by the Stephens-Adamson Mfg. Co.

The unit is offered complete with head and tail assemblies, supporting A-frames, and intermediate sections of bent-plate decking. The decking is constructed in 12-foot sections for simple erection or alteration of the conveyor. Return rollers and returning belt are mounted on its underside, shielded from weather and falling material.

The conveyor is available in 18, 20, 24, 30, and 36-inch belt widths, with drives ranging up to 50 horsepower. Although available as a complete package, the unit may be mounted on almost any type of support, according to the manufacturer.

For further information write to the Stephens-Adamson Mfg. Co., Dept. C&E, P. O. Box 272, Aurora, Ill., or use the Request Card at page 18. Circle No. 169.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the Request Card at page 18.

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MEREDITH DRILLING COMPANY INC.

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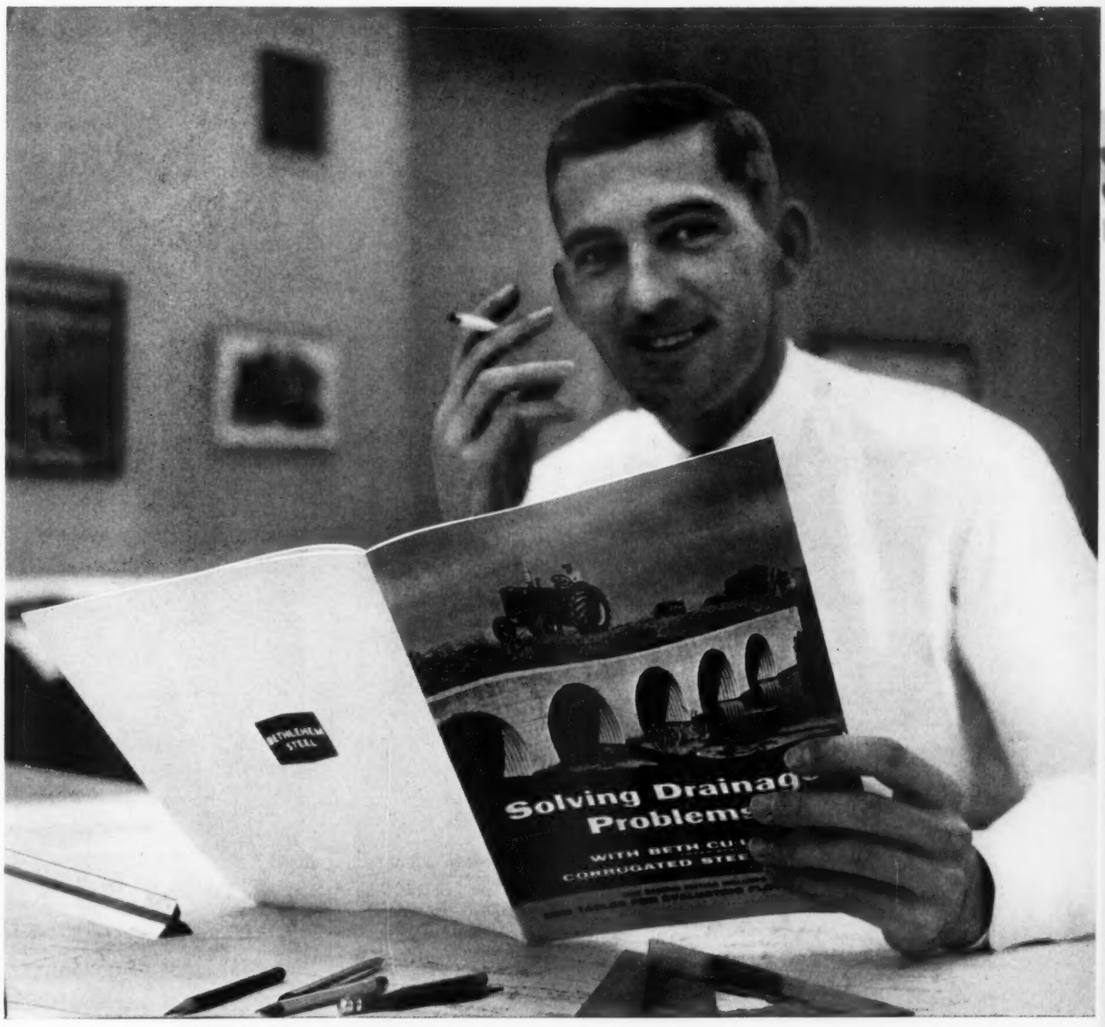
CONSULTATION BY REGISTERED ENGINEERS, JOHN MEREDITH AND ASSOCIATES, QUOTATIONS WORLD WIDE

SEND FOR OUR FREE BROCHURE
"OUR BUSINESS IS GOING IN THE HOLE"

For more facts, circle No. 314



SEND NOW

For your copy of "Solving Drainage Problems"

If your work in any way involves the problems of drainage, here is a practical, helpful reference for your bookshelf. It's Bethlehem's Booklet 425, "Solving Drainage Problems," with 76 pages of down-to-earth engineering material which any contractor, engineer or township official can use in designing, specifying, and installing.

SPECIAL TABULAR SUPPLEMENT

The booklet is crammed with graphs, charts and nomographs—specifically compiled to help you design drainage structures, calculate run-off, and solve other engineering problems. In addition, it contains a brand-new supplement of eight pipe-design tables, along with a pamphlet explaining in detail how to use these valuable new tables. Much of the material has never been made generally available before.

FILL OUT THE COUPON NOW!

The first printing of this booklet was exhausted within a month! This new edition, revised and improved over the original, is now ready. Fill out and send in the coupon today!

BETHLEHEM STEEL COMPANY
ROOM 1041A
BETHLEHEM, PA.

Please send me a copy of Booklet No. 425 "Solving Drainage Problems"

*NAME*_____ *TITLE*_____

*ADDRESS*_____

*CITY AND STATE*_____

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

For more facts, use coupon, or Request Card at page 18 and circle No. 315

Drainage structures and base course are widened in this road improvement project. The base gets a priming with a hand hose rigged to a horse-drawn distributor.

Poland is pushing road reconstruction

Widening and surfacing of primary and secondary highways is target; typical jobs feature plant-mix and soil-cement work

Roads in Poland, like those in most countries of the world, range from bad to good. And like highway administrations in most countries of the world, the Polish Central Office of Public Roads is following a road improvement program to upgrade its poor or inadequate highways to satisfactory standards.

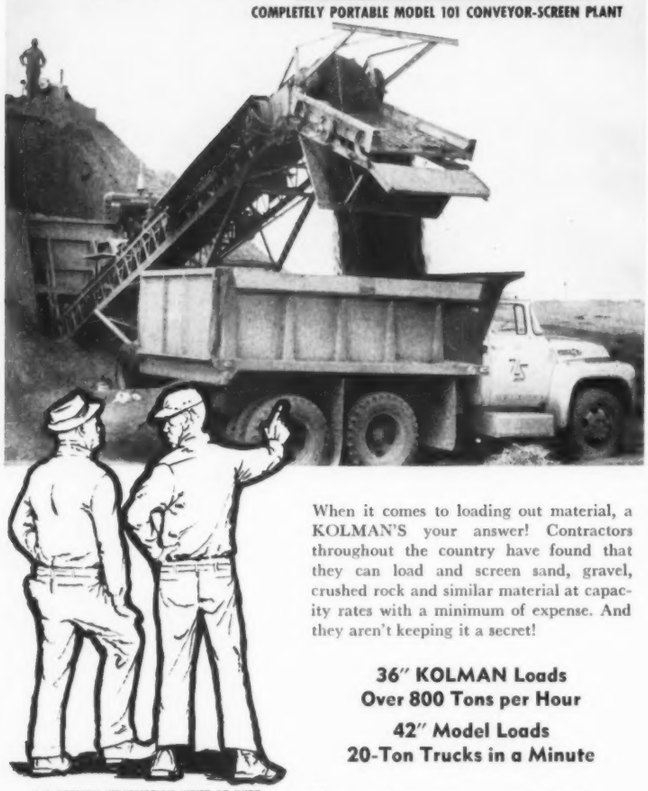
With a population of 27,819,000 and an area of 120,432 square miles, Poland has a highway system of 150,000 miles. Of this total, 60,000 miles are on the primary system which includes about 40 per cent of bituminous pavements. The remainder is macadam, brick, stone, and some short stretches of 20-year-old concrete near the larger population centers. The other 90,000 miles of secondary roads are the farm-to-market type with either field stone or dirt surfaces.

During World War II the highway system took a bad pounding from heavy tanks, artillery trains, and overloaded trucks. Bridges were blown up by the hundreds, but these have nearly all been rebuilt. Roadwork is practically all reconstruction, for motor vehicle traffic has not reached a point where new roads are in demand. Reconstruction consists of widening, resurfacing, relocating to eliminate sharp curves, the extension of drainage structures, and work on an occasional bypass to skirt a community where narrow streets impede traffic.

Some pavements have held up remarkably well despite the ravages of war and the neglect of maintenance through the years of occupation. One stretch of brick, 70 kilometers long (42 miles), from Bedzin north through Czestochowa has a smooth surface today although heavily armored panzer divisions rumbled over this highway constantly during the war years. Field stone paving, called "cat-heads" from the shape of the rounded-off top stone, is usually sound structurally. This type of surface, however, leaves much to be desired in smooth-riding quality, particularly with the short wheelbase Warszawa, a popular Polish car manufactured at the Zeran Works in suburban Warsaw. This sturdy, stubby automobile appears to wear well despite the pounding it gets.

'What You Need is a KOLMAN'

COMPLETELY PORTABLE MODEL 101 CONVEYOR-SCREEN PLANT



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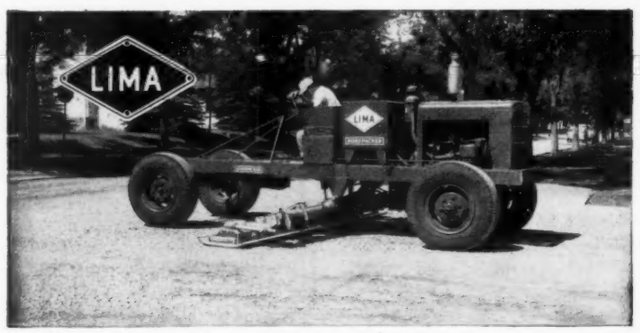

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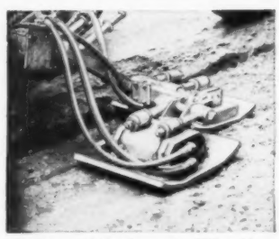

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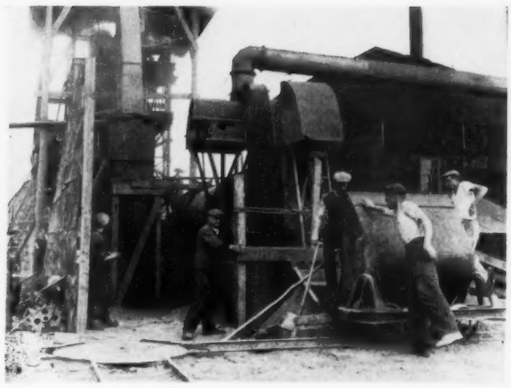
From stockpiles, aggregate is loaded by hand into tram cars that are pushed along narrow-gage tracks to the asphalt plant.



From the side-dump cars, the aggregate is fed via grizzly and feeder to the cold elevator supplying the dryer.

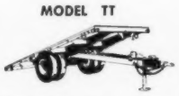
Primary road improvement

Improvement of both primary and secondary roads is included in Poland's long-range 15-year highway program. A typical reconstruction project on each type of road, both with bituminous surfacing, is detailed in this article. The primary job is a 12-kilometer (7.4-mile) stretch on the Rodom to Opoczno highway, where a waterbound macadam 5-meter-wide (16.4-foot) surface is being widened to 7 meters (23 feet), and covered with bituminous concrete. The project is in the Kielce district, one of 17 highway districts into which Poland is divided. The Kielce district is south of Warsaw and has about 4,000 kilometers (2,480 miles) of primary highways. In the current construction season, the program calls for the improvement of 220 kilometers (136 miles) in this district by surfacing water-bound macadam highways with a bituminous concrete mat.

First step in reconstruction was the widening of culverts and drainage structures to 12 meters (39.4 feet) for the new 7-meter pavement. The needed grading followed, and a 2½-meter (8.2-foot) shoulder was added on each side. Front slopes are 1 on 3 to the ditch line, with the back slopes in cuts 1 on 5. In a few areas where frost action had broken up the existing highway, the macadam was removed and the subgrade was undercut and backfilled with a granular

(Continued on next page)

MODEL TT



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MODEL PX-O

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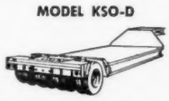
MODEL KSO-D



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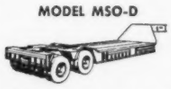
MODEL MSO-D



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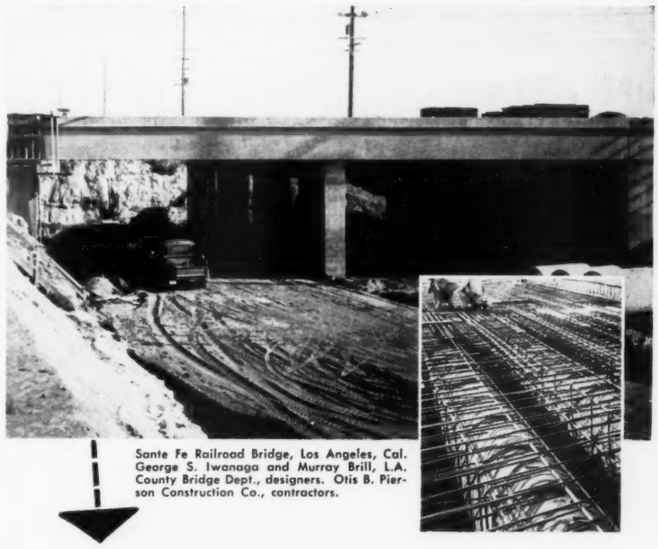

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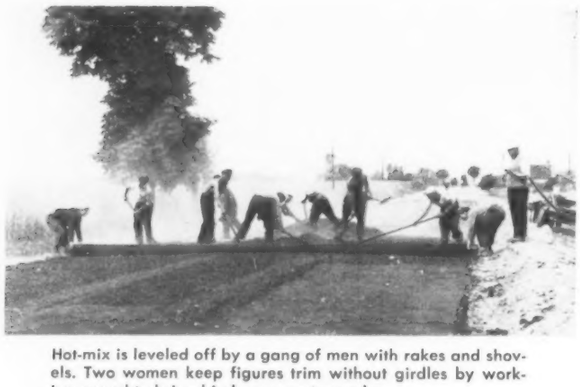

Hot-mix is leveled off by a gang of men with rakes and shovels. Two women keep figures trim without girdles by working screed to bring binder course to grade.

(Continued from preceding page)

subbase. Material for this pervious layer came from nearby deposits of sand and gravel. Average depth of the foundation course varies from 20 to 30 centimeters (8 to 12 inches).

The water-bound macadam was replaced where it had been removed, and also extended out for the widening. Its depth is 22 cm (8.7 inches). Along both sides, this base course is flanked by a line of border stone 30 cm (12 inches) in depth and about 15 cm (6 inches) wide. This basalt stone extends from below the bottom of the macadam base to the top of the new bituminous pavement. It is costly to install since the heavy stone must be laid by hand. In some quarters, however, it is felt that the border stone serves a useful purpose by preventing the pushing out of both pavement and base under the action of horses' hooves. The greatest impact from the hooves of heavy draft horses is usually noticed at the extreme edges of the pavement.

Bituminous surfacing

The full width of the water-bound macadam base course is then primed with 200-penetration asphalt applied at the rate of from 0.7 to 0.8 kilograms per square meter. Priming is done just in advance of paving operations with a hand hose. A horse-drawn distributor, with a self-contained heating unit, supplies the hot asphalt.

Two courses, binder and top, of asphaltic concrete are then laid with compacted thicknesses of 2 and 3½ centimeters (about ¾-inch and 1¼-inch respectively.) The binder is spread at the rate of 50 kg per sq. meter, and the top at the rate of 85 kg per sq. meter. Typical mixes of the two courses are:

Per cent of materials	Binder	Top
Coarse aggregate		
8–16 mm.	25.9	
5–8 mm.	11.1	14.7
0–5 mm.	9.2	31.1
Sand	35.1	31.1
Lime filler	11.1	14.6
Asphalt		
40–60 penetration	7.6	8.5
	100.0	100.0

The coarse aggregate is a gray basalt rock that is quarried in southern Poland. Sand comes from a nearby deposit at Wolanow. Bitumen is shipped to the project in both metal drums and wooden kegs.

Asphalt plant

A hot-mix plant of Russian derivation was set up for this project at a railroad crossing near the east end of the job. Its 500-kilogram pugmill

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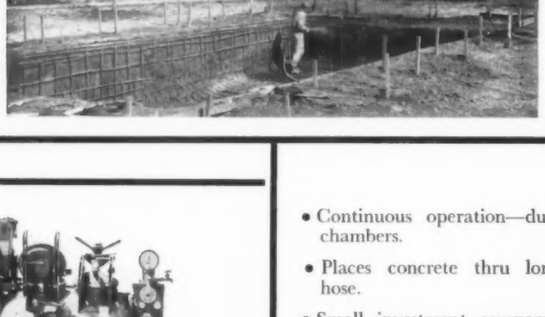

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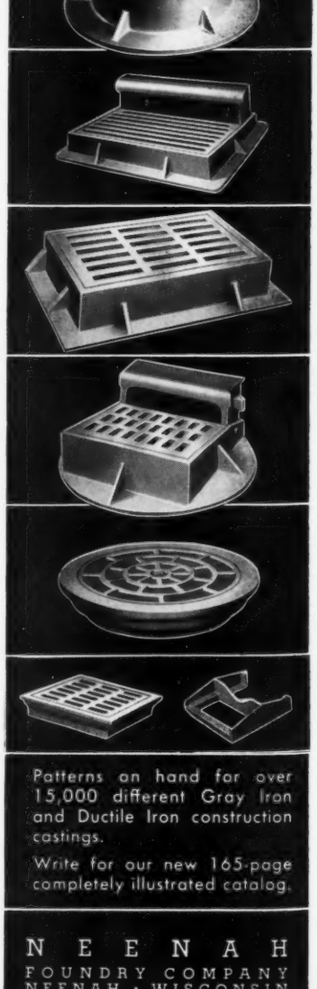

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averages about 20 tons of plant-mix per hour. Steam for the plant is furnished by a Polish locomotive-type boiler. All operations of the plant—feeder, cold and hot elevators, dryer, pugmill, etc.—are driven by electric motors from power tapped off a transmission line.

The metal drums containing the hardened cores of asphalt are cut open, while the wooden kegs are broken apart by knocking off the hoops. Slugs of bitumen are raised to the top of the tank house, next to the plant, and dropped into a vat which is heated by a coal-burning boiler. From there the liquid asphalt, at a temperature of around 160 degrees C., is pumped to the supply tank at the pugmill.

Aggregate is loaded by hand from stockpiles into side-dump tram cars that are pushed over narrow-gage tracks to a grizzly and feeder at the foot of the cold elevator. Right-angle turns in the track layout are made with circular turntables. The cold elevator feeds the dryer, and from there the heated aggregate goes up an enclosed hot elevator to the bins and pugmill. The lime filler is handled by a separate elevator.

Laying the mix

From three to six Star trucks (named from Starachowice, the Polish city where they are manufactured) haul the hot-mix to the job site. The trucks handle 4-ton loads, and the number used varies with the haul distance. Maximum haul is 10 kilometers (6 miles). For the relatively thin binder course, (2 centimeters) the asphaltic concrete is laid by hand. As the trucks end-dump their loads, a gang of men spread it out over the base with rakes and shovels to approximate grade. Hand tools are heated in a fire box at the side of the road.

A transverse wooden screed, handled by a woman at each end, follows the hand-spreading to bring the binder course to true grade. The screed is cut to the crown of the road which slopes 2 per cent from the center line. A Kemna 10-ton tandem steam roller compacts the courses. The 3½-centimeter surface course is laid with a Russian bituminous finisher. It is topped with a seal coat of 300-penetration asphalt applied at the rate of 0.6 to 0.7 kg/sq. meter, and covered with sand, which is cast by hand.

Total labor force on this project numbers 160, including the grading, widening, haluing, material-handling, and plant crews. The job is under

(*Continued on next page*)

A Kemna tandem steam roller compacts binder course as Star truck arrives from plant with another load of asphaltic concrete. The roller is an old-type German make.

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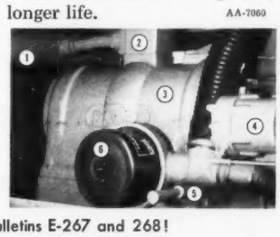

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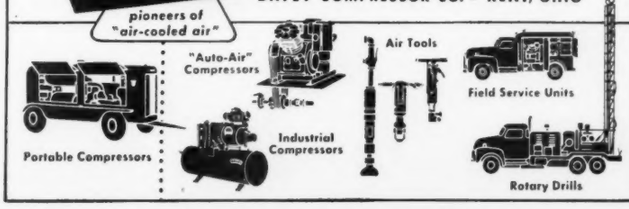

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Soil-cement spread includes a Polish crawler tractor pulling two tank trailers of water. A hose transfers the water to the Seaman Pulvi-Mixer.

The Seaman Pulvi-Mixer lays down a smooth lane of sand and gravel mixed with cement and water for a stabilized base course on this secondary road.

(*Continued from preceding page*)

the supervision of Stefan Pesztak, director of roads in the Kielce district with Karol Kozdeba, engineer of construction, and Ladzislaw Wilk, engineering supervisor.

Soil stabilization

A job, typical of secondary road projects, is the improvement of a 31-kilometer (19-mile) section between Wolomin and Jadow in the Warsaw district. Here a 9-meter-wide (29½-foot) roadway is getting a 5.2-meter (17-foot) cement-stabilized base course for the support of a 5-meter (16-foot 3-inch) blacktop pavement. The existing narrow dirt road was first graded and widened to a 9-meter carriageway, and a course of gravelly sand spread out for the base. Cement from 50-kilogram (110-pound) paper sacks is spread on top by hand.

Next a Seaman Pulvi-Mixer passes over the road, mixing the soil and cement with water added from tank trucks. The tanks hold about 12,000 liters (3,168 gallons), and a pair of them are pulled along by a small crawler tractor on one half of the road, while the Seaman rig moves down the other half mixing as it proceeds. The water is transferred through a hose line. Soil on this job averages about 3.7 per cent moisture as it is spread for the base. Water is added to bring the moisture content up to 7½ per cent, the optimum. The cement content ranges from 6 to 12 per cent by weight.

Before compaction the base is 20 centimeters (7¾ inches) thick, but after a rolling with a 13-wheel rubber tire roller, the thickness compresses to 15 centimeters (6 inches). The stabilized base then tests for 98 per cent compaction, and has a volumetric weight of 2.205 grams per cubic centimeter.

The usual procedure is to mix materials for six hours and compact for the remaining two hours in the 8-hour work day. An average of 400 square meters (478 square yards) of base is completed in a day. After seven days the soil-cement base develops a compressive strength of 20 kg/sq. cm (about 300 pounds per square inch.)

Tar-mix surface

After 20 days of curing out, the base is swept off and primed with tar at the rate of 0.8 kg/sq. m. This

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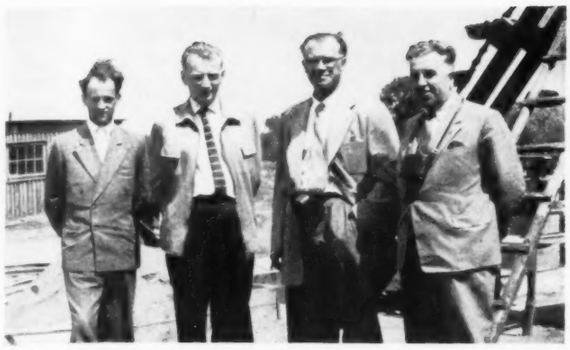

Polish highway engineers include from left to right, Kasmier Wactawck, technician, and Brunow Nowieki, engineer of construction, both on the soil-cement job; Stefan Rolla, development engineer from the Central Bureau of Public Roads, and Boleslaw Przelaskowski, director of roads in the Warsaw district.

is followed by a two-course bituminous-concrete pavement of a tar-aggregate mix totaling 70 kg/sq. m. The lower course of 30 kg/sq. m is about 1.2 cm (½-inch thick), while the 40 kg/sq. m. top course is about 1.6 cm (⅝-inch) thick. A Linnhof plant turns out the hot-mix, at the rate of 100 tons a day, which is laid by hand. The surface is given a seal coat of tar, 0.6 kg/sq. m, and sand.

Besides the Seaman Pulvi-mixer, job equipment includes an Allis-Chalmers HD-7 and a Russian tractor for grading and towing rollers; 7 Ursus rubber-tire Polish tractors and one crawler; a Zis Russian truck for hauling cement; and a pair of 13-wheel rubber tire rollers for compacting.

A force averaging 70 is engaged on the project under the supervision of Boleslaw Przelaskowski, director of roads in the Warsaw district, with Brunow Nowieki, engineer of construction, and Kasmier Wactawck, technician.

The Polish Central Bureau of Public Roads is headed by Aleksander Gajkowicz, director. Stefan Rolla is chief of the development division.

Rolla is sometimes referred to as the Radzikowski of Poland after H. A. Radzikowski who is Chief, Development Division, U. S. Bureau of Public Roads. The two engineers, with like titles, met when Rolla visited this country last September. THE END

Clark-MAC formed to make transmissions in Brazil

Clark-MAC, C. A., has been formed by the Clark Equipment Co., Buchanan, Mich., the House of Rothschild, and MAC, S. A., a Brazilian gear-manufacturing firm. The new firm will manufacture truck transmissions and drive components in Brazil for the South American-built products of Clark, Ford Motor Co., and others.

Transmission production is scheduled to start early next year. Present plans call for the manufacture of the transmissions for Ford and other users, including Equipementos Clark Piratininga, S. A., Sao Paulo, which manufactures and distributes Clark's line of material-handling and construction machinery in Brazil. A potential capacity of 5,000 to 6,000 transmissions per month is expected by 1960.

Foster International news

Tore Wistedt has been named general manager of Foster International Corp., an affiliate of L. B. Foster Co., Pittsburgh, Pa. Wistedt, who will make his headquarters in New York City, has been associated with international marketing of steel products for more than 20 years. Prior to joining Foster this year, he was president of American Ferrox Corp.

Roebling names three district sales managers

The Wire Rope and Aircord Division of John A. Roebling's Sons Corp., Trenton, N. J., has appointed John P. Kadlic and Earl A. Frazier district sales managers at New York City and Seattle, respectively. Kadlic is in charge of the New York-New England area. Frazier, succeeding the late Arthur R. Robinson, directs sales in Oregon, Washington, Idaho, and most of Montana. Charles A. Wagner succeeds Kadlic in his former post as Philadelphia district manager.

The Roebling firm, which is a subsidiary of the Colorado Fuel & Iron Corp., makes wire products.

Parsons appoints Smith

The Parsons Co., Newton, Iowa, manufacturer of Trenchliners, has appointed Roy V. Smith as sales representative for its North-Central District. Smith covers a 12-state territory. a 12-state territory. Parsons is a division of Koehring Co., Milwaukee, Wis.

Maintain traffic while laying shoulder material and back-filling

POWER-PACK is a multi-purpose machine that gets jobs done fast

There's no need to stop or delay traffic when you use POWER-PACK for back-filling and shoulder work. Its working width of less than 12' permits you to maintain traffic without slowing down your work. Contractors, state and county highway crews have found POWER-PACK also speeds up jobs and pays for itself in one season.

- Conveyor quickly changed for right or left discharge
- Spreads sand, stone or hot mix
- Minimizes manual clean-up
- Requires only one operator
- Frees larger equipment for other work

Model 600 for backfilling to 4' from pavement

Model 605 for shoulder work up to 5' from pavement

Model 610 for backfilling to 8' beyond truck

Send for complete details now!

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VULCAN TOOLS are sold by distributors throughout the United States and Canada.

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Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Automatic welding—a folder describing all types of Hobart automatic and semiautomatic welding equipment. Covers power sources, wire feed mechanisms, guns, heads, and controls for submerged arc and inert-gas-shielded arc welding. Bulletin DM73.

Write to the Hobart Brothers Co., Dept. C&E, Hobart Square, Troy, Ohio, or use the Request Card at page 18. Circle No. 6.

Tractor—a booklet describing the International TD-14 diesel tractor. Details all major components of the machine, its operation, equipment, and attachments. Illustrations include a large cutaway view. Form CR-630-H.

Write to the International Harvester Co., Construction Equipment Division, Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 99.

Rock-drill lubricants—an illustrated folder describing D-A rock-drill lubricant, which is compounded for all rock drills, and D-A Rock Drill 500, which has a heavier consistency and is compounded primarily for Joy TM500 rock drills.

Write to the D-A Lubricant Co., Inc., Dept. C&E, 1331 W. 29th St., Indianapolis, Ind., or use the Request Card that is bound in at page 18. Circle No. 91.

Wire-rope slings—a well illustrated reference book covering more than 80 subjects on Tuffy slings and fittings. Includes new reference information condensed into handy chart form on sling types, dimensions, and rated loads. Covers many fittings not previously shown, together with charts on sizes, rated loads, and other specifications. Form SL-3.

Write to the Union Wire Rope Corp., Dept. C&E, 2100 Manchester Ave., Kansas City 26, Mo., or use the Request Card at page 18. Circle No. 115.

Self-contained portable materials heater—literature describing the Chattanooga materials heater for use with asphalt plants. According to the manufacturer, in one self-contained portable unit the Chattanooga replaces a boiler or oil heater; material, oil, water tanks; piping and pumps. The literature also states that the unit brings asphalt to operating temperature in one hour from a cold start.

Write to the Industrial Boiler Co., Inc., Dept. C&E, P. O. Box 9133, Chattanooga, Tenn., or use the Request Card at page 18. Circle No. 133.

Vibrating screen bearings—an illustrated bulletin describing the SKF spherical roller bearing for vibrating screens. According to the literature, the bearing features a substantially increased load-carrying capacity and fatigue life, and a cage which permits it to operate at combined high eccentricity and speed.

Write to SKF Industries, Inc., Dept. C&E, P. O. Box 6731, Philadelphia 32, Pa., or use the Request Card at page 18. Circle No. 127.

Loader—literature describing the Duncan loader for standard, wide-front, or small crawler tractors. The unit is said to raise to a height of 10 feet at the bucket swivels, and to have a lifting capacity of 4,000 pounds.

Write to the Irrigation Pump Co., Dept. C&E, Columbus, Nebr., or use the Request Card at page 18. Circle No. 140.

Portable dredge—a well illustrated folder on the new Model CD-10B Dixie-Dredge. Contains several case-history-type reports on the unit's performance on a variety of jobs. One section devoted to construction details and operating characteristics. General specifications; data on standard and optional equipment.

Write to the Service Machinery Corp., Dept. C&E, P. O. Box 225, North Miami, Fla., or use the Request Card at page 18. Circle No. 124.

Breaker balls—a bulletin describing Eagle Iron Works' semi-steel and Ni-Hard chromium-nickel-iron alloy breaker balls from 1,500 to 6,500 pounds in weight. On-the-job photos. Specifications.

Write to Eagle Iron Works, Dept. C&E, P. O. Box 934, Des Moines, Iowa, or use the Request Card at page 18. Circle No. 93.

Dust collector—a Dust Suppression & Engineering Co. bulletin describing and illustrating a wet-type dust collector that separates the dust from the air by centrifugal and impingement action against wetted surfaces, without the use of sprays, moving elements, and water eliminators. Bulletin No. 581.

Write to the Dust Suppression & Engineering Co., Dept. C&E, 120 S. Broadway, Lake Orion, Mich., or use the Request Card at page 18. Circle No. 9.

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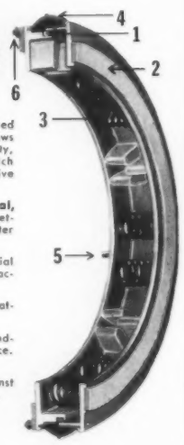
Typical "Par Beaters" . . . FINAL DRIVE BELLOWS SEALS For D-4, D-6, D-7, D-8, D-9 TRACTORS



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2. **New Korprene facing,** a proved material superior to ordinary natural or synthetic facing materials.
3. **Equal-pressure springs,** self-aligning, heat-treated for long service.
4. **Oil-resistant bellows.** Specially compounded for flexibility, toughness, oil-resistance. Ribbed for extra strength.
5. **Steel locating pins,** added protection against shearing damage on seals for D-7 and D-8.
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There's a SURE-SEAL that will do a better job on YOUR tractor. Tell your dealer: "Install Sure-Seals!"

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LIFT SNOW PLOWS ... automatically

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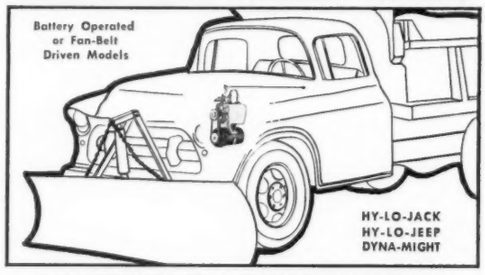

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- Infinite choice of loads
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Write for Bulletin 50-A

TINIUS OLSEN TESTING MACHINE CO.

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Base paver—literature describing the Watson Cmetco Rola Paver for use in spreading base materials. According to the company, spreading up to 200 tons of crusher-run base per hour is not unusual for this machine.

Write to the H. S. Watson Co., Dept. C&E, 1316 67th St., Emeryville, Calif., or use the Request Card at page 18. Circle No. 78.

Crawler tractor—a booklet highlighting the features of the Allis-Chalmers HD-16 diesel crawler tractor. Illustrations include a large cutaway view of both gear transmission and torque converter models. Data on accessories; specifications. Bulletin MS-1289.

Write to the Allis-Chalmers Mfg. Co., Construction Machinery Division, Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 81.

Highway water repellent — a folder describing the advantages of Spallbar, a water repellent said to reduce substantially spalling on concrete highway surfaces, as well as contribute to the safety of motorists through providing better traction and increased night road visibility in wet weather. Application data; photographs.

Write to Silicones Division, Union Carbide Corp., Dept. C&E, 30 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 23.

Pumps—a bulletin describing the Ohler line of twin-prime, self-priming centrifugal pumps for a variety of applications. Photographs; specifications.

Write to the Ohler Machinery Co., Dept. C&E, P. O. Box 687, Waterloo, Iowa, or use the Request Card at page 18. Circle No. 7.

Single-acting pile hammers—a brochure containing physical specifications and performance data on the complete McKiernan-Terry line of single-acting pile hammers. Features photographs and sectional drawings of the powerful low-velocity steam-air hammers, and includes sectional drawings of various drive caps available for use with these hammers. Also contains an illustrated explanation of single-acting hammer operating principles, along with pile static load-bearing curves for the firm's entire line of this type of hammer.

Write to the McKiernan-Terry Corp., Pile Hammer Division, Dept. C&E, 100 Richards Ave., Dover, N. J., or use the Request Card at page 18. Circle No. 8.

Form stakes—literature featuring Rockford Bolt & Steel Co. Saber stakes for fast and accurate staking. Also discusses other hardware for a wide variety of forming requirements. Illustrated with sketches, photographs.

Write to the Rockford Bolt & Steel Co., Dept. C&E, 126 Mill St., Rockford, Ill., or use the Request Card at page 18. Circle No. 97.

Ditcher—a folder detailing the features of Barber-Greene's Model 774 wheel-type ditcher. Also discusses special accessories for operation in rocky ground or in gumbo. Photos show the Model 774 at work under a wide range of job conditions.

Write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 100.

Grader-blade control—a folder featuring Preco's automatic blade control for Caterpillar motor graders. Describes and illustrates how this control can make a good operator an expert. Photos; case histories.

Write to Preco Inc., Dept. C&E, 6300 E. Slauson Ave., Los Angeles 22, Calif., or use the Request Card at page 18. Circle No. 141.

Metal retaining walls—a booklet describing Armco metal bin-type retaining walls. Data on installation, including discussion of curve problems. Typical applications shown in photos, drawings.

Write to Armco Drainage & Metal Products, Inc., Dept. C&E, 703 Curtis St., Middletown, Ohio, or use the Request Card at page 18. Circle No. 80.

Concrete forming—a 56-page catalog describing the complete line of concrete forms, form ties, accessories, construction specialties, and highway products offered by the Universal Form Clamp Co. A generously illustrated, handy reference guide for anyone engaged in the forming of concrete.

Write to the Universal Form Clamp Co., Dept. C&E, 1238 N. Kostner, Chicago 51, Ill., or use the Request Card at page 18. Circle No. 142.

Backhoe—an illustrated fact sheet describing the new Wain-Roy backhoe, Model WRHFC & D, for the Model HFC Payloader. According to the literature, the unit digs and dumps at any angle in a 190-degree radius. Specifications included.

Write to the Wain-Roy Corp., Dept. C&E, Hubbardston, Mass., or use the Request Card at page 18. Circle No. 126.

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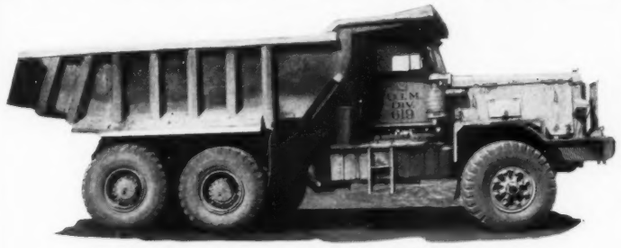
For MINES and QUARRIES



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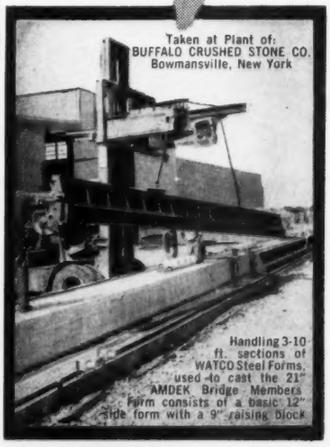
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You will benefit from big volume production, labor-saving set-up time and more efficient casting facilities for all your present and future needs with a WATCO form installation. Whether you are engaged in pre-tensioning, post-tensioning, or a combination of both, WATCO forms are available to produce all standard prestressed concrete sections, including the AASHO-PCI bridge girders. To get the complete details about modern, efficient, labor-saving forms for precast and prestressed concrete, write now, to

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Job: Widening U.S. 81
Location: Bexar County, Texas
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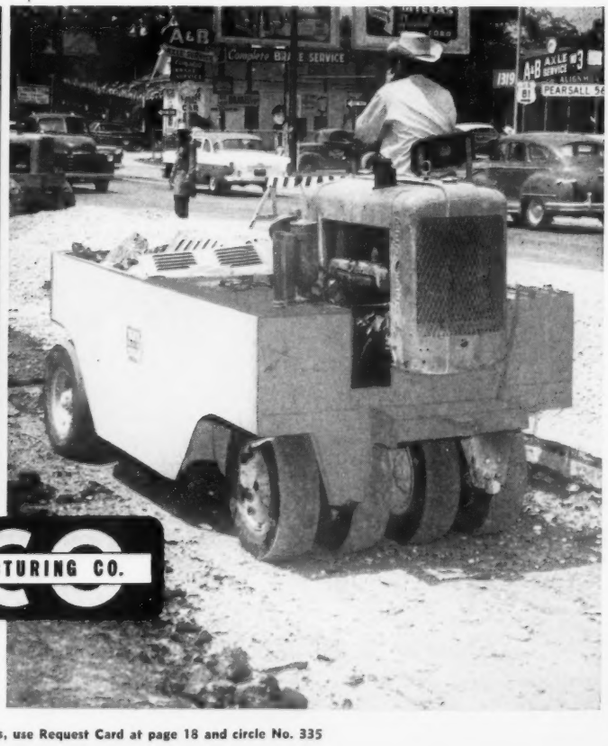

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For more facts, use Request Card at page 18 and circle No. 335

Product Literature

Salt tablets—literature describing the benefits of United States Safety Service Co. impregnated salt tablets. Data on various types available, as well as information on three types of packaging. Instructions for ordering.

Write to the United States Safety Service Co., Dept. C&E, 1535 Walnut St., Kansas City, Mo., or use the Request Card at page 18. Circle No. 30.

Heavy-duty transmissions—an illustrated booklet on the Fuller line of single-stick, semi-automatic Road-Ranger transmissions for over-the-highway and off-highway service. Includes complete shifting patterns, gear ratios, and the per cent of step between ratios for all standard and optional ratios. Condensed specifications.

Write to the Fuller Mfg. Co., Dept. C&E, Kalamazoo, Mich., or use the Request Card at page 18. Circle No. 128.

Engine pre-heater—a booklet on Kim Hotstart electric pre-heaters for diesel and gasoline engines. Describes units of 750 and 1,000 watts for use in light trucks, and 2,500 and 4,000-watt heaters for heavy trucks, tractors, and power units. Photos of typical installations. Also contains data on the firm's explosion-proof cap for use near combustible materials.

Write to the Kim Hotstart Mfg. Co., Dept. C&E, W. 917 Broadway, Spokane 1, Wash., or use the Request Card at page 18. Circle No. 107.

Electronic batch weighing — a brochure on the Fairbanks-Morse Batchetron, an electronic control system for batch weighing any type of material that is handled into batch hoppers by piping, screw conveyors, belts, vibrating feeders and the like—or from overhead supply bins where material flow can be controlled by gates or valves. A typical batching operation is described and illustrated.

Write to Fairbanks, Morse & Co., Dept. C&E, 600 S. Michigan Ave., Chicago 5, Ill., or use the Request Card at page 18. Circle No. 143.

Track rollers — a bulletin from Caterpillar on the makeup and maintenance of track rollers. Each roller part is reviewed in detail with drawings, cutaways, and photographs used to point up individual features. Data on roller rims, bearings, seals, and shafts; directions for proper lubrication and reconditioning. Form D817.

Write to Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the card at page 18. Circle No. 144.

Hard-facing — literature describing Victor hard-facing rods for a wide variety of equipment. Rods for manual, automatic, and semi-automatic application.

Write to the Victor Equipment Co., Alloy Rod & Metal Division, Dept. C&E, 13808 E. Imperial Highway, Norwalk, Calif., or use the Request Card at page 18. Circle No. 86.

Physical testing equipment — a completely indexed, 128-page catalog and price list describing the newest developments in Testlab testing equipment related to soils, concrete, and asphalts.

Write to the Testlab Corp., Dept. C&E, 250 W. 57th St., New York 19, N. Y., or use the Request Card at page 18. Circle No. 31.

Asphalt plant—literature describing Simplicity hot or cold-mix asphalt plants. Stresses such features as the units' double shell dryer, 4-ton mixer, and fully automatic batching and mixing.

Write to The Simplicity System Co., Dept. C&E, Riverside Drive, Chattanooga, Tenn., or use the Request Card at page 18. Circle No. 79.

Tractor shovel—an illustrated brochure on the Yale & Towne Model Y-18 tractor shovel. Describes in detail such features as the fully automatic Yale torque transmission; safety curve arms; 45-degree bucket tip-back; and the 6-foot-high dumping clearance. Maintenance data.

Write to the Yale & Towne Mfg. Co., Materials Handling Division, Dept. C&E, 11,000 Roosevelt Blvd., Philadelphia, Pa., or use the Request Card at page 18. Circle No. 98.

Dust collectors—a bulletin describing Ducon cyclone dust collectors. Includes a detailed description of the various design and structural features of the cyclones, application drawings and illustrations, and a discussion of the numerous factors involved in cyclone performance and selection. Bulletin C-958.

Write to The Ducon Co., Inc., Dept. C&E, 147 E. Second St., Mineola, N. Y., or use the Request Card at page 18. Circle No. 130.

Circular slide rule—a pocket-size circular slide rule for performing simple calculations. Operation of the rule is said to be fast and simple, and to provide accurate results.

Write to the General Industrial Co., Dept. C&E, 5738 Elston Ave., Chicago 30, Ill., or use the Request Card at page 18. Circle No. 14.

Directional control valves — an illustrated bulletin describing Parker VDSP5 series 65-gpm hydraulic directional control valves for mobile equipment. The series includes 1-spool, 2-spool, and 3-spool models. According to the literature, the body is symmetrical so that operating spools and integral relief valves can be assembled from either end to accommodate individual installation requirements.

Write to the Parker Hydraulics Division, Parker-Hannifin Corp., Dept. C&E, 17325 Euclid Ave., Cleveland 12, Ohio, or use the Request Card at page 18. Circle No. 21.

Vibrating screens—a bulletin offering the design and construction features of Allis-Chalmers low-head horizontal vibrating screens. Diagrams installation methods along with floor-mounting arrangements for the screen, and gives size and dimension tables on cable-suspended and floor-mounted units.

Write to the Allis-Chalmers Mfg. Co., Dept. C&E, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 82.

Wire-rope lubricant—a brochure describing the applications of Whitmore's wire-rope lubricant. According to the literature, the lubricant is used to minimize friction and eliminate corrosion in wire rope on many types of machinery.

Write to the Whitmore Mfg. Co., Dept. C&E, 3816 Iron Court, Cleveland, Ohio, or use the Request Card at page 18. Circle No. 113.

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Roadsweepers,

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Circulating asphalt heaters

Asphalt Distributors

Pneumatic rollers, self-propelled or trailed

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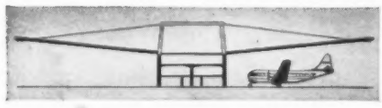

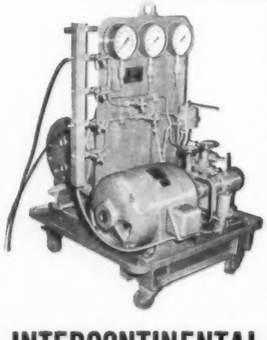

The Corbetta Construction Company used our center hole rams and hydraulic pumps to meet the challenge of cantilever design in the new Pan American World Airways terminal at New York's International Airport.

Our complete line of hydraulic equipment is competitively priced and designed to meet your specific application on any prestress job. Your inquiry is invited.

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for ROAD and HIGHWAY MEASURING

The Rolatape 600 can be hitched to and operated from the rear of a vehicle. Ideal for long distances.
The Rolatape 400 with extended handle can be used to record measurements conveniently from a car window.

USE Rolatape MEASURING WHEELS

Get your road and highway measurements FASTER, EASIER, ACCURATELY with either the Rolatape 400 or 600 measuring wheel. Precision calibrated for accuracy, the Rolatape automatically records measurements in feet as it is rolled along. Durable construction assures long service, yet lightweight provides easily handling.

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ROLATAPE, INC.

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For more facts, circle No. 339

Firms produce accessories for two A-C tractors

The Utility Tractor and Equipment sales department of Allis-Chalmers Mfg. Co., Milwaukee, Wis., is now working with independent manufacturers to produce companion equipment for the Utility tractor Models D-14 and D-17. When A-C engineering clearance is given to companion equipment, a statement of such clearance may be issued by its manufacturer in promotional material.

Manufacturers' equipment already cleared includes: backhoes and loaders—Henry Mfg. Co. and Shawnee Mfg. Co., Topeka, Kans., and Wagner Iron Works, Milwaukee; loaders and cutterbar highway mowers—A. C. Anderson, Inc., Wildwood, N. J.; rotary tillers—Howard Rotavator Co., Inc., Arlington Heights, Ill.; rotary mowers—Danuser Machine Works, Inc., Tulsa, Okla.; Sunflower Industries, Inc., Olathe, Kans.; and Wood Brothers Mfg. Co., Oregon, Ill.

Both lines of the D-14 and D-17, and companion equipment, will be sold on a nonexclusive basis through dealers of the firm's Farm Equipment, Construction Machinery, and Engine-Material Handling Divisions.

"Hurry Mabel! I understand there are some men stripping down there."

Motorola promotions

Burt Mendelson has been promoted to assistant director of marketing for the Communications and Industrial Electronics Division of Motorola, Inc., Chicago, Ill. Mendelson, former manager of the division's Market and Planning Department, will continue to supervise new product and market planning activities.

Frank W. Walker has been named a vice president and manager of government sales by Motorola Communications & Electronics, Inc., Chicago, Ill., a wholly-owned sales subsidiary of Motorola, Inc. Working from Motorola's Washington, D. C., office, Walker is responsible for sale, contract, lease, and service relationships with the federal agencies. Robert L. Kranhold has been promoted to Walker's former post as regional manager for Motorola in the southwestern United States.

Lincoln Electric expands

The Lincoln Electric Co., Cleveland, Ohio, has opened two new district offices in Memphis, Tenn., and Albany, N. Y. District managers for the offices are, respectively, Robert W. Thomas, formerly in the Philadelphia office, and Russell S. Hale, formerly in the Chicago office.

John F. Kotchian, Charles M. Richardson, and William F. Fisher have been named district managers of the company's North Haven, Conn.; Franklin, Pa.; and Phoenix, Ariz., offices, respectively.

Hoist sales manager named by Yale & Towne

John J. Garrity has been promoted to hoist district sales manager for northern California, northern Nevada, Utah, and Hawaii by the Yale Materials Handling Division, The Yale & Towne Mfg. Co., Philadelphia, Pa. The former Detroit district sales representative now supervises and assists in the sale of electric and hand hoists through 30 industrial supply firms that are located in his new territory.

Garrity makes his headquarters in the firm's San Leandro, Calif., manufacturing plant.

DE-WATERING PROBLEMS LICKED

FLYGT ELECTRIC PUMPS

Contractors throughout the world find FLYGT SUBMERSIBLE ELECTRIC PUMPS tops in performance on any de-watering problem. Users such as Bechtel Corp. and Peter Kiewit Son's Co. like FLYGT foolproof features, the advantage that the pumps work in any position, and the fact that they do not clog up. FLYGT PUMPS are low in initial cost, low in operating expense, require little attention . . . save you money. FLYGT SUBMERSIBLE ELECTRIC PUMPS range in size from 1½"-85 GPM capacity to 8"-3000 GPM capacity. Head capacities range up to 210 feet. Weights range from 80 to 1200 pounds.

CHECK THESE FLYGT FEATURES

✓ Electric ✓ Submersible ✓ Heavy Duty
✓ Resistant to Salt Water ✓ Will Pump High Amount of Solids ✓ Quick and Easy to Service
✓ Easy to Handle ✓ Operates Unattended ✓ No Installation Costs
✓ Low Maintenance Costs ✓ Runs Dry Without Damage ✓ No Priming Needed

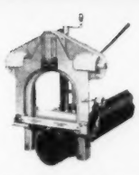
WRITE FOR NAME OF YOUR NEAREST DEALER

West of the Mississippi:
STANCO
MFGS. & SALES INC.
1666 Ninth St.
(Cor. of Olympic & Ninth)
Santa Monica, California

East of the Mississippi:
STENBERG
Mfg. Corporation, Ltd.
Hoosick Falls
New York

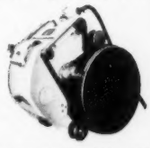
For more facts, circle No. 340

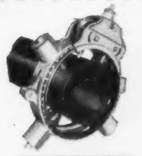
WACHS Portable
POWER AND MANUAL PIPE CUTTERS
2" TO 72" CAPACITY


WACHS GUILLOTINE SAW
2" to 8" Capacity
Electric or Air Drive

"BIG" GUILLOTINE SAW
10" to 16" Capacity

WACHS CHICAGO


WACHS NATIONAL SAW
"The milling machine on wheels"
Cuts 10" to 72" Pipe


WACHS STRICKLER RATCHET CUTTER
"Lathe Type Cuts"
5 sizes—2½" to 24" Capacity

Write for descriptive bulletins

THE E. H. WACHS COMPANY
Manufacturers of Engineers, Drillers and Machinists since 1883
1525 NORTH DAYTON STREET · CHICAGO 22, ILLINOIS

For more facts, circle No. 342

MULLER MACHINES

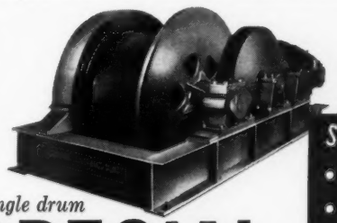
PLASTER AND MORTAR MIXERS
5 sizes 2 to 12 Cu. Ft. Electric or gasoline. Power throw-out on smaller models, disc clutch on larger
3½ Cu. Ft. NON-TILTING CONCRETE MIXER
Drum 36" dia. x 27" wide. B & S Air-cooled engine 4.5 Hp. at 2700 RPM
4 BLADED POWER TROWELS
24", 29", 34", 44" dia. B & S Air-cooled engines. Clutch and speed controls on handle
MULLER MIXER
CONCRETE MIXERS TILTING TYPE
3, 3½, and 6 Cu. Ft. (mixed concrete). Electric or gasoline. Timken Bearings.

have economy features that save you money

Muller Machines are designed primarily for economical and efficient operation. Better materials, better power units, protection against excessive wear, provide low-cost operation . . . freedom from excessive maintenance . . . unusually long-life. You get more for your money when you buy a Muller Machine.

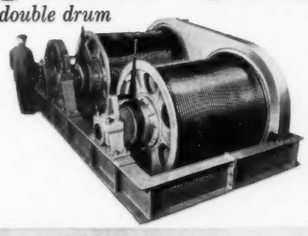
Ask for prices and name of local dealer.
MULLER MACHINERY COMPANY, INC.
Metuchen 14, N. J. Cable Address: MULMIX

For more facts, circle No. 341



Specify
• load
• speed
• special conditions

single drum
SPECIAL CARPULLERS
double drum



For your Special Carpuller consult Superior-Lidgerwood-Mundy—They Know How.
Write for New 24 page Bulletin C-616

SUPERIOR-LIDGERWOOD-MUNDY CORPORATION
Main Office and Works: SUPERIOR, WISCONSIN, U.S.A.
New York Office, 7 Dey Street, New York 7, N. Y.

For more facts, circle No. 343

Construction camera

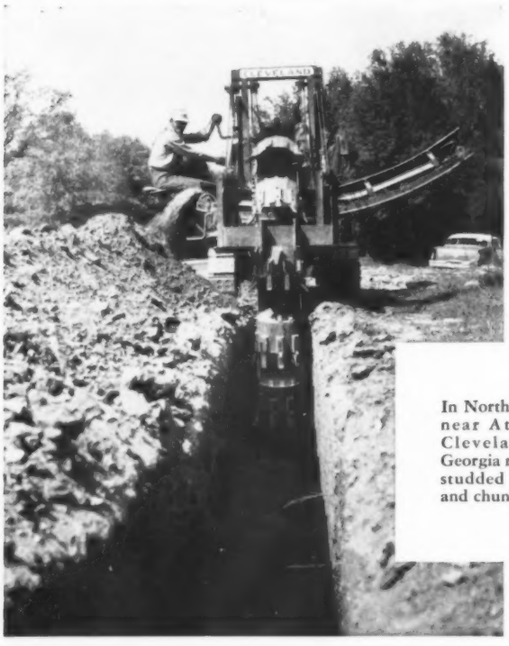
Aggregates for a California grading-paving project are loaded out to a Diamond T rear-dump truck by a Michigan 125A front-end loader. The stockpile is maintained by an Allis-Chalmers tractor-dozer. The contractor on the highway job is F. Wills Corp., Antioch, Calif.

Irrigation of Columbia Basin land is developed further as the Main Pot Hole Canal at Othello, Wash., is widened from 24 to 62 feet. Excavation is handled by a Manitowoc 3500 dragline, which is hitting a production of about 2,000 yards of material every 8 hours.

Huge rubber-tire train designed by LeTourneau

A gigantic trackless train, which can be driven by conventional types of engines or by atomic reactors or other nuclear power, has come off the design boards of R. G. LeTourneau, Inc., Longview, Texas. The off-highway rubber-tire, 52-wheel train has all-wheel drive, complete steering controls at both ends, and a new tracking arrangement that makes it reversible and maneuverable under most working conditions.

Design for the train calls for a length of 450 feet, with tires to measure 10 feet high and 4 feet wide. Maximum speed is flexible, depending to some extent upon terrain conditions. The 2,000 or more horsepower can be geared for either maximum speed or power. The most probable compromise would be with the speed at about 20 mph, LeTourneau officials state.



In North Druid Hills near Atlanta, this Cleveland 95 digs Georgia red clay, often studded with quartz and chunks of granite.

nine Clevelands . . . never a failure in the field

"We have used Clevelands ever since 1946, when our company was organized," says C. V. Lanier, field superintendent for the Concrete Construction Co. of Atlanta, Ga., "and currently we are operating nine. Mechanically, we have never had a Cleveland halt in the field.

"We have encountered every sort of obstacle and have trenched through blue granite rock, sand rock, shale, stumps, on flat land and hilly, through all types of weather. Our Clevelands have been economical to operate, easy to maintain mechanically, adaptable to every terrain and simple to handle."

There's nothing like a Cleveland for trenching . . . accurate . . . fast . . . dependable . . . clean.

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

Good Everywhere

For more facts, use Request Card at page 18 and circle No. 344

announcing a whole new line of single axle over-the-wheel platform trailers

NEW MILLER model "J" Tilt-Tops

available in 3 capacities

"J-6" six tons
"J-8" eight tons
"J-10" ten tons

model illustrated
MILLER "J-10" $1250*

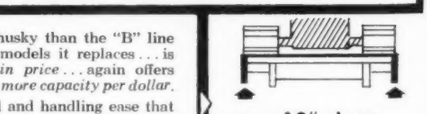
The new "J" line . . . more husky than the "B" line of over-the-wheel platform models it replaces . . . is introduced at *no increase in price* . . . again offers economy minded contractors *more capacity per dollar.*

And you get all the speed and handling ease that helps you cover more jobs *with one rig!* One man can tilt, simply drive the equipment onto the broad oak decked platform, be on his way in less than two minutes. Shuttling tractors or other rigs from one job to another is so easy, so fast . . . it can often save duplicating expensive equipment.

Each new "J" model has the new extra deep side channels for maximum strength right at the platform edges where wide tracked rigs impose heavy strains.

See these new production boosters at your MILLER distributors today.

*F.O.B. Milwaukee
Complete with platform and tires. Any optional equipment extra.
Plus 10% Federal Tax



new 10" deep side channels

Extra deep side channels integrally welded to heavy cross members, provide rigid support for the heavy strains imposed along the edges by wide tracked rigs.

"H" beam axle

Super tough, this H beam straight-thru axle has solid steel, stub inserts for extra strength over rough roads. Long life Timken roller bearings assure positive wheel alignment.

Miller Tilt-Top Trailer Inc.

✓built best ✓priced best

See your MILLER distributor or write for FREE literature

456-H South 92nd St. • Milwaukee 14, Wisconsin

For more facts, use Request Card at page 18 and circle No. 345

High-flying, pulverized clay particles are blown out of the rear of a Pulvi-Mixer working on a housing project at Fort Knox, Ky. After three passes, 15 per cent excess moisture was removed from the clay. This aeration made it possible for the contractor to meet specifications for 90 per cent modified AASHO compaction.

Construction for a new building is handled by an American Econmobile 600 powered by a Red Seal engine. The new structure will house the Airborne Systems Laboratory of the Warrenton Corp. at Burlington, Mass. Turner Construction Co., New York City, is the contractor for the project.

Mobile Drilling sells contract division

Mobile Drilling, Inc., Indianapolis, Ind., manufacturer of drilling equipment, has sold one of its subsidiaries, Mobile Drilling & Engineering, Inc. The new firm, also located in Indianapolis, will be known as American Testing & Engineering Corp. and will be primarily concerned with contract drilling, laboratory testing, and design recommendations.

Sargent Engineering bought by Iowa dealer

McNall Machinery & Supply Corp., Cedar Rapids, Iowa, machinery dealer and distributor, has acquired all outstanding shares of Sargent Engineering, Inc., Fort Dodge, Iowa. The acquired firm, which will operate as a wholly-owned subsidiary of McNall Machinery, manufactures ⅜-yard heavy-duty crawler and truck-mounted shovels, cranes, etc.

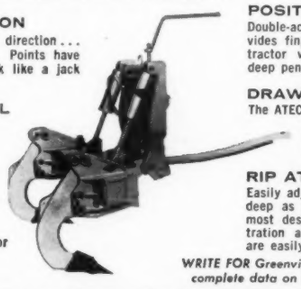
Big Ripper Tackles Tough Rock Jobs

Designed to use full power of IH TD14, TD18, TD20 or TD24

The tremendous power of the IH TD14, TD18 or TD24, plus the 10,000-pound Greenville tractor-mounted rock ripper, shatters rock and packed earth for easy scraper loading. On many jobs explosives, shovels and trucks are eliminated. Put this power-packed team to work for you. Your IH dealer can give you the facts. Let him show you how you can save as much as 25% on any earth or rock moving job.

LIVE SWIVEL ACTION
Shanks swivel 15° in either direction . . . follow tractor like a trailer. Points have live action that shatters rock like a jack hammer.

RUGGED POWERFUL SHANKS
Scientific contour gives extra strength at strain points and pulls points down deep . . . rocks roll out and clear of headframe. Made of tough, heat-treated, manganese-moly steel. Mount one, two or three shanks as needed.



POSITIVE CONTROL
Double-acting hydraulic system provides fingertip control and puts full tractor weight on points for fast, deep penetration.

DRAWBAR TAKES PULL
The ATECO drawbar replaces the tractor drawbar and drawbar brackets. Clevis is accessible with ripper installed.

RIP AT ANY DEPTH
Easily adjusted to permit settings as deep as 24". Points are always at most desirable angle for best penetration and splitting action. Points are easily replaced.

WRITE FOR Greenville Bulletin IH-658. It gives complete data on the Greenville-Ateco ripper.

See it at your International-Harvester Dealer's

GREENVILLE
STEEL CAR COMPANY
ATECO DIVISION
Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 346

Rosco Roller owned by Jay W. Craig Co., Minneapolis, on job at Aitkin, Minn.

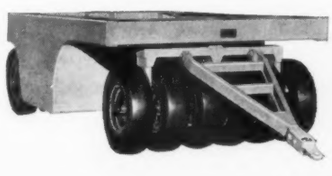
Increase Operator Efficiency and Produce More Work Per Hour with the ROSCO ROLLER SR-9-T2

★ Torque Converter ★ Reverse-Omatic Drive
★ Constant Speed ★ Power Brakes and Steering

With this improved 9 wheel self-propelled roller your operator can surface nearly a 6 foot width at working speeds up to 15 MPH. The torque converter and Reverse-Omatic clutch and transmission eliminate scuffing of the surface. Power steering and a throttle setting device that returns to manual at a touch reduce operator fatigue and produce more work per hour.

A modern large-bore, short-stroke engine produces a surplus of power and travel speeds to 30 MPH. Water compartments are integral with the body and other components are set low for safe center of gravity and operator visibility. These features and Rosco's quality construction make the SR-9-T2 a solid investment and profit maker.

Rosco Roller SR-9-T2 with water attachment



Models CR9 and CR13
9 or 13 wheel tow-type rollers, 90 and 120 cubic feet capacity.

ROSCO MINNEAPOLIS
ROSCO MANUFACTURING CO.
3118 SNELLING AVE. • MINNEAPOLIS 6, MINNESOTA

For more facts, use Request Card at page 18 and circle No. 347

Federal Highway Administrator Bertram D. Tallamy reports that, as of the end of May, $377,312,000 in Interstate work had been completed since July 1, 1956. He states that $1.6 billion in construction was under way. In all, $4.8 billion in Interstate jobs was programmed.

GET THE TIE-WIRE PROBLEM

off your neck...

Workers recognize the danger of carrying re-bar tie wire in cumbersome shoulder coils—the ever present hazard of loose ends causing facial or eye injuries—the danger of being thrown off balance when the coil catches on a protruding object.

and put it where it belongs

They are equally quick to recognize the safety and convenience of using CF&I Cal-Tie Wire in our new, compact dispenser. It leaves both hands free • wire can't kink or catch • work in close quarters is easy and safe • no discarded coils to trip workers • speeds up job time.

Try Cal-Tie Wire in the new belt-borne CF&I handy reel dispenser. Together they weigh less than seven pounds. Are available in 14-through 20-gage annealed wire. Contact our nearest sales office for full details.

5935

CF&I CAL-TIE® WIRE

THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver El Paso • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita • WICKWIRE SPENCER STEEL DIVISION — Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

For more facts, use Request Card at page 18 and circle No. 348

L-20 White ASPHALT PLANT

PAYS FOR ITSELF IN 38 DAYS!*

**$14,700 F.O.B. Elkhart is price of portable model illustrated. Stationary model, $13,900 F.O.B. complete, ready to operate. Prices subject to change without notice.*

Make your own hot mix asphalt with this new WHITE plant and save up to $2.30 a ton. At its capacity of 160 tons an 8-hour day, that's a savings of $368.00 a day. Thirty-eight of those days pays for the L-20!

Produce any type mix you can get from a $100,000 plant: hot, RC, MC, SC and emulsified for top course, base course, one course, or patch. Two men operate. Capacity is rated at a hot 325 degrees.

The L-20 will supply black-top for suburban streets, driveways, parking lots, school yards, or state highway maintenance.

See your nearest distributor or write direct for full information.

White Manufacturing Company, Elkhart 9, Indiana

For more facts, use Request Card at page 18 and circle No. 349

Manufacturer memos

James J. Ford, general manager of the Fuel Injection Division, Hartford Machine Screw Co.

Hartford Machine names general, sales managers

James J. Ford and Fritz Maier have been appointed general manager and sales manager, respectively, of the Fuel Injection Division of Hartford Machine Screw Co., Division of Standard Screw Co., Hartford, Conn. Ford was formerly the division's sales manager for the Roosa Master fuel injection pump, fuel filters, and allied products for the diesel engine industry. Maier joined the firm three months ago.

At the same time, the division appointed Frederick R. Hill as assistant sales manager; James N. Britton, service manager; and Pasquale Demase, assistant factory manager.

Office, sales managers named to A-C branch

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has appointed Clinton F. Kucera and M. J. Rotroff manager and general sales manager, respectively, of the company's New York City office. Kucera, former assistant manager of the office, succeeds N. W. Landis, now manager of the firm's Northeast region.

Rotroff, former manager of transportations sales in the home office, will now represent the company in the sale of Tractor Group products to national and international users, from New York City.

Allis-Chalmers has also appointed James F. Foley assistant advertising manager of the Farm Equipment Division. Foley was formerly manager of the Industrial Press Section of the Tractor Group Sales Promotion and Advertising Departments. He is a charter member of the recently formed Construction Writers Association.

SERVICE MANAGER WANTED

Service Manager wanted for G. M. diesel engine service work. Answer this ad only if you have had experience and are well qualified.

Armstrong Equipment Company, P.O. Box 749, Birmingham, Alabama.

STOP that WATER

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—hold 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs. Applied quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

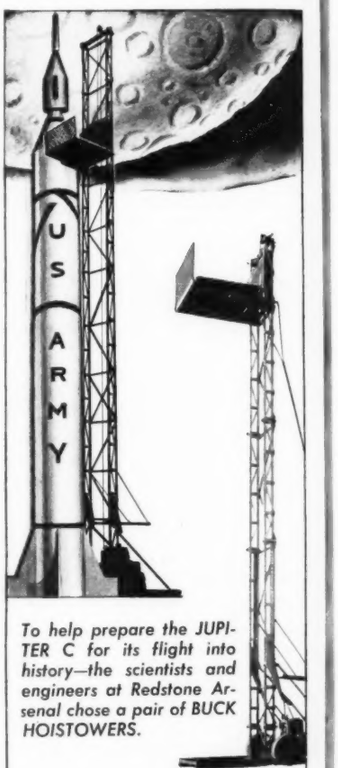
HAYNES PRODUCTS CO., OMAHA 3, NEBR. With FORMULA No. 640

Armco chairman honored

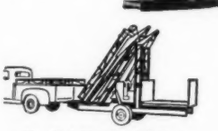
Charles R. Hook, chairman of the board of Armco Steel Corp., Middletown, Ohio, has received a special citation for his achievements in industrial management throughout his career in the steel industry. Hook was awarded the honor by the Indiana Technical College, Fort Wayne. Hook has been with Armco for 56 years.

Detroit firm renamed

The Truco Water Swivel Division of Wheel Trueing Tool Co., Detroit, Mich., has been renamed Truco Masonry Drilling Division in order to identify it more accurately with its diversified line of equipment for diamond drilling in masonry.



To help prepare the JUPITER C for its flight into history—the scientists and engineers at Redstone Arsenal chose a pair of BUCK HOISTOWERS.



Tow it right to the jobsite.

the BUCK hoisTower

Self-erecting to a height of 45 ft. The tower can be placed and erected by just one man in 23 minutes.

The HOISTOWER will raise a load of 2500 lbs. to heights of 175 ft. and more. With speeds up to 170 ft. a minute, it is the strongest and fastest portable HOISTOWER in the world.

Concrete Buckets, Poop Decks, Booms, Extra Sections and other Accessories, make it the most versatile and money-making machine a contractor can have.

For your nearest dealer or more information—write

BUCK EQUIPMENT CORPORATION
720-D Anderson Ferry Road
Cincinnati 38, Ohio

For more facts, circle No. 350

Charles R. Tyson, executive vice president of The Colorado Fuel & Iron Corp.

CF&I elects C. R. Tyson executive vice president

Charles R. Tyson has been elected executive vice president of The Colorado Fuel & Iron Corp., New York City.

Tyson also holds the same post in John A. Roebling's Sons Corp., Trenton, N. J., a wholly-owned subsidiary of CF&I that was acquired in December, 1952. Up to that time, Tyson was president of the Roebling firm.

Cyanamid personnel news

Five new members have joined the staff of the Engineering and Construction Division of American Cyanamid Co., New York City. In the project engineering department are A. A. Lahna and Robert M. Sanford, supervising project engineers; Gerard T. Barnett, senior engineer in the scheduling group; and Vincent J. Haigney, administrative assistant to the manager. Calvin H. Kyte is senior engineer in the engineering department.

Worthington appoints two

The Plainfield, N. J., Division of Worthington Corp., Harrison, N. J., has appointed Gerald A. Guerin and Paul F. DeLisi as positioning-equipment distribution supervisors. From Chicago headquarters, Guerin supervises the Midwestern region, which includes the Chicago-Milwaukee, St. Louis, Kansas City, Minneapolis, and Denver district office areas. DeLisi, headquartered at the Plainfield, N. J., offices, supervises the Eastern region which includes the Newark Sales (in Harrison), New York, Boston, Philadelphia, Washington, D. C., and the Atlanta district office areas.

U. S. Steel subsidiary names sales managers

William W. Burnham has been appointed sales manager, Philadelphia sales territory, of the Universal Atlas Cement Co., New York subsidiary of U. S. Steel Corp., Burnham, formerly assistant sales manager of the territory, succeeds Robert E. Fulton, who recently retired.

John T. Hughes has been named sales manager of the firm's New York sales territory. He succeeds William J. Plant, who retired.

Highway Equipment news

William Roeschen has been appointed chief engineer of Highway Equipment Co., Cedar Rapids, Iowa. During the past 25 years, Roeschen has served as senior manufacturers' estimator, plant superintendent, and chief industrial engineer for industrial machinery manufacturing firms.

Caterpillar promotes three executives

The Caterpillar Tractor Co., Peoria, Ill., has promoted Gail E. Spain to president of the firm's Foreign Trade Group, and J. R. Munro and W. K. Cox to vice presidents of the company.

Spain, who continues as a vice president of the parent company, will be in charge of British, Australian, Brazilian, and Canadian subsidiaries, as well as Caterpillar Americas Co., Caterpillar Overseas C. A., and Caterpillar of Delaware, Inc. Munro, formerly director of manufacturing for foreign operations, will have administrative responsibility for the firm's Manufacturing Division.

Cox succeeds Spain as vice president in charge of domestic sales and sales promotion activities. Succeeding Cox as manager of sales promotion is L. L. Morgan.

Target Northern news

Sam Ashwood has been named vice president of Target Northern Corp., Kansas City, Mo. Ashwood will be responsible for the distribution of Target masonry and concrete saws and abrasive, safety, and diamond blades.

Brunner & Lay news

Dick Davis has joined Brunner & Lay, Inc., Franklin Park, Ill., as Pacific Northwest manager. He will make his headquarters at the firm's new Seattle, Wash., warehouse, where complete lines of Rok-Bits, drill steel, and air accessory tools are stocked.

General Tire names

Richard H. Ness has been named Southeastern sales representative for the building materials division of The General Tire & Rubber Co., Akron, Ohio. From headquarters in Atlanta, Ga., Ness directs sales of the firm's vinyl and rubber flooring.

Earl Schaub, former division manager at Akron, Ohio, has been promoted to manager of retread rubber sales for the western United States. He is replaced by William M. Hempel, former Twin City division manager. Succeeding Hempel at the Minneapolis post is Frank E. Roch, previously truck-tire sales manager for the Twin City division.

John M. Derr, former Raleigh, N. C., territory salesman, has been promoted to manager of truck-tire sales for the firm's Charlotte, N. C., division.

Euclid appoints

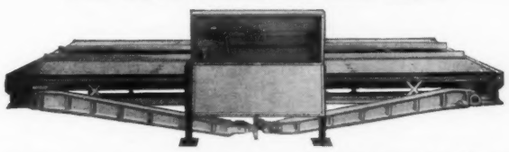
Olin A. Lee has been appointed district representative in the Central region of the Euclid Division, General Motors Corp., Cleveland, Ohio. From headquarters in Denver, Lee works with Euclid dealers in Colorado, New Mexico, Arizona, and sections of Nebraska, Wyoming, and Texas.

Highway Trailer news

The Highway Trailer Co., Edgerton, Wis., producer of truck trailers and construction machinery, has established executive offices in the Postum Bldg., 250 Park Ave., New York City. The new offices are headquarters for the chairman of the board and members of the company's sales staff.

WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor

WINSLOW SCALE COMPANY P.O. Box 1198 Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 351

SWENSON SPREADERS FOR ICE CONTROL

SPREADS SALT 200 LBS. PER MILE OR IN ANY DESIRED AMOUNT

Lays a Narrow Strip or Full Traffic Lane

Handles all granular materials — salt, cinders, sand, calcium chloride, rock chips. Spreads at speeds up to 30 M.P.H. Clutch-controlled flow: steady or intermittent for hills and intersections.

Write for complete information

SWENSON SPREADER & MFG. CO.
LINDENWOOD, ILLINOIS

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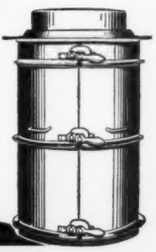

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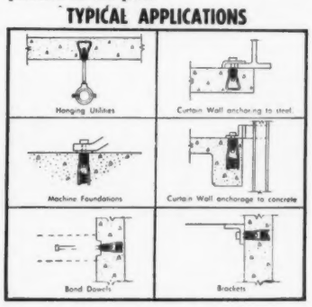

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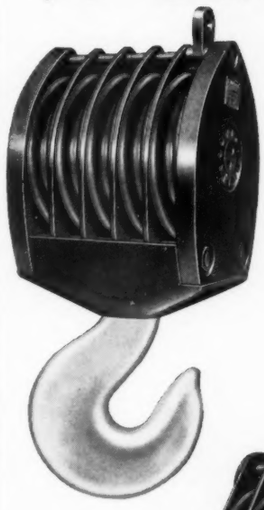

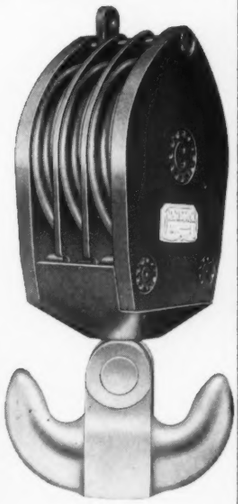

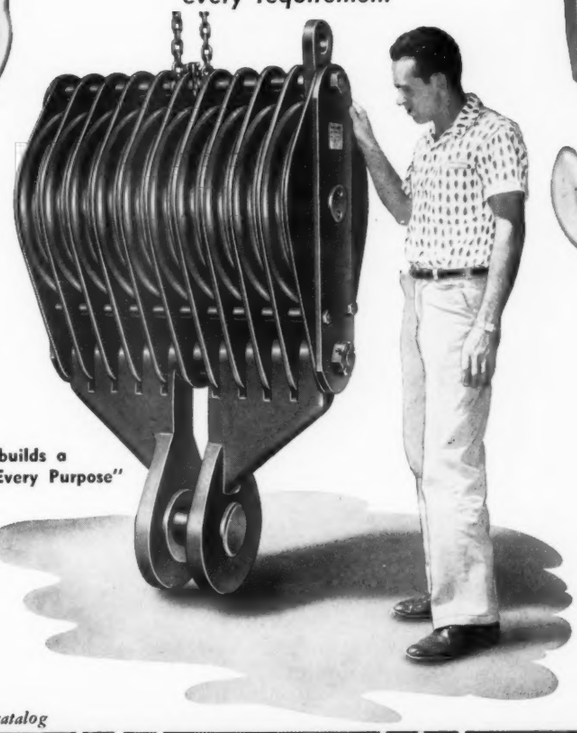

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Surveying washington

by GEORGE RIVEIRE, JR.

Second rivers, harbors bill gets White House approval

On the second try, Congress got an omnibus rivers and harbors bill past the White House. When the President earlier this year vetoed such a bill, there was talk on Capitol Hill of trying to override the action. But Congressional leaders took a nose count and found they didn't have the necessary votes.

So rather than have no legislation at all, they decided to heed the President's advice and draft a fresh bill to save what the Chief Executive called the many meritorius flood-control, navigation, and beach-erosion projects.

The White House vetoed the previous bill on the grounds that a handful of the 150 projects included did not measure up to the standards of the U. S. Army Corps of Engineers and the Budget Bureau. Not having the power to prune out individual projects, the President had to turn down the entire bill.

Congress went along with the President and met most of the executive department's objections in devising clean legislation. The new bill passed muster.

Senate Majority Leader Lyndon Johnson (D., Texas) commended the legislators for not setting out "to override a veto impetuously". Instead, he said, "they held careful hearings, combed over the bill point by point, listened to the views of all concerned, and produced a measure which all of us can support.

"This type of approach may not produce issues but it does produce effective legislation which serves the American people", Johnson concluded.

Appropriations pending for $1.55 billion bill

The enacted rivers and harbors measure carries a price tag of $1.55 billion. It authorizes construction of 137 new projects and increases funds for 13 river-basin projects, with the money being about equally divided for the two categories. Further, the legislation authorizes surveys of 59 additional potential projects.

It should be noted that the act merely authorizes the building of the projects; it does not provide a penny for them. Funds to carry through on what is authorized must come in an appropriation bill.

Whether the money will be forthcoming for all the authorized projects, or even most of them, is a problem. Appropriation bills always offer a sterner test than authorization measures. Congress is more careful when brass-tacks time arrives.

Actually, the executive department does not have to build a project even if money is appropriated. The item can be left out of the federal budget.

Public-works backlog amounts to $11.5 billion

Sen. Norris Cotton (R., N. H.), who cast the only negative Senate vote on the rivers and harbors measure, was dubious about adding to the public-works backlog. He pointed out that the U. S. Army Corps of Engineers and the Bureau of Reclamation already have on hand 576 water-resources projects which have been authorized but which have yet to be started. Cost of the stacked-up projects amounts to $7.7 billion.

In addition, Cotton said, another 180 projects, involving $3.8 billion, have been started but not finished. The total backlog amounts to 756 projects costing $11.5 billion.

At the current rate of spending for construction, according to the senator, it will take about 16 years to clear out the existing backlog, which does not include the items in the new bill.

Bill to revise, codify highway law provisions

Working its way through Congress is a bill designed to end the confusion about the multiplicity of federal-aid highway laws. The legislation revises and codifies into a single tight package the various provisions of highway law. Rep. George Fallon (D., Md.) authored the bill as chairman of the House roads subcommittee. It passed the House without opposition.

Since the first federal-aid highway act in 1916, about 40 separate laws on the subject have been enacted, with many new provisions inserted in the various enactments. As a consequence, the welter of existing laws contains obsolete provisions which have amended, supplemented, or repealed —expressly or by implication—earlier provisions of law.

The natural result has been to make administration of the federal-aid

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highway program more difficult than it need be. To determine existing federal law on a particular point frequently requires minute and time-consuming research by attorneys, and for the layman the job is sometimes impossible.

Having scores of separate laws with conflicting provisions scattered all over the statute books may have done no significant harm in the past. But since passage of the Highway Act of 1956 and the supplementing bill this year, the Road Program has become a multibillion-dollar enterprise. The need for administering a program of such magnitude with utmost efficiency has become vital. A clear and concise code of law would be a big help. The revision provided by the bill makes no substantial changes in highway law. Rather, the changes lie in substituting plain language for awkward terms, reconciling conflicting laws, omitting superseded sections, and consolidating similar provisions.

The bill eliminates all executed, obsolete, amended, or repealed provisions in the many road laws since 1916. It lists and codifies in an orderly and logical arrangement all the permanent provisions in these laws, plus those in appropriations acts pertaining to highways.

Many states are ahead of Uncle Sam in recognizing the need to have an updated and concise reference telling what the law is on highways. They have already revised and recodified laws which had become cumbersome, voluminous, and sometimes contradictory.

Fallon said the codification bill will be of "tremendous help" to those on the federal, state, and local level who have to carry out the huge national roadbuilding program. He cited the importance of having a single document as a definitive guide for highway administrators, adding that such a document "will be a starting place from which to reference subsequent legislation".

Senate increases funds in airport construction bill

The Senate passed with dispatch legislation extending federal aid for airport construction through fiscal 1963, but the measure ran into sticky going in the House. The House Commerce Committee, which has jurisdiction over the bill, was totally absorbed in the Goldfine-Adams affair and delayed all hearings on other matters.

The Senate bill increases matching funds for airport development from $63 to $100 million annually. Further, it provides an extra $75 million in "emergency" funds, primarily to help terminals get set for the new jetliners.

The bill prohibits matching funds for construction of airport administration buildings, parking lots, bars, cocktail lounges, theaters, game rooms, and other facilities deemed nonessential by the Secretary of Commerce.

Construction this year matches that of 1957

Preliminary government estimates show that dollar volume of new construction put in place during the first half of 1958 was $22.1 billion, about the same as last year.

Public construction was reported as somewhat above the first six months of 1957, owing primarily to expanded activity in highways and public housing. Private construction, at $15.5 billion, was down slightly because of declining industrial construction outlays.

Mideast situation gives impetus to "clean" reciprocal trade bill

Developments in the Middle East enhance the chances of the administration getting the kind of reciprocal trade bill it wants. The Senate killed a move to make the program permanent, but the bill is expected to pass the Senate shortly in a form acceptable to Eisenhower. One amendment opposed by the President would curb his tariff cutting powers.

Other amendments opposed by the President are expected to be left to a Senate-House conference. These include amendments limiting the extension of the bill to three instead of five years. (The five-year term had already been approved by the House.) Another amendment would abolish the power of the President to make cumulative tariff cuts over a period of years. The importance of the bill to the construction industry lies in the fact that countries needing the equipment for heavy-construction projects would find it easier to make purchases here, and makers of equipment would be able to step up export production.

THE END

LONGER, MORE PROFITABLE ROLLER LIFE—THE RESULT OF CONTINUOUS IMPROVEMENT OF CATERPILLAR PARTS

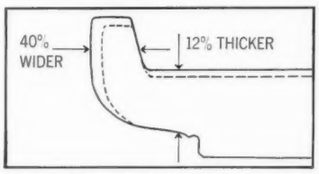
Cat "500" Track Rollers for D8s now have increased rim size for greater strength

A ceaseless search for ways to improve parts performance goes on at Caterpillar. Engineers are constantly striving to make each machine part do its job better, longer and more economically. The payoff for the customer is the steadily improving performance of Cat machines on the job.

New "500" Track Rollers for Cat D8 Tractors, for example, have been redesigned to better resist wear and breakage on the tough jobs. The roller rim has been thickened 12% in its critical area; the flange is 40% wider. The new design prevents roll-over and bending of the outer flange under severe side hill loads.

All Cat roller rims are designed so that treads and flanges may be economically rebuilt by automatic welding—a feature which results in big savings over the life of a tractor.

But that's only part of the story. Matchless Caterpillar quality starts with selection of steel. Extensive testing in Caterpillar metallurgical laboratories eliminates all but the finest quality steel *before* roller manufacturing begins. Further tests (61 in all) are made at every stage of production.



ADDITIONAL MATERIAL on new D8 roller rim is shown by dotted line, above. Thicker, stronger flanges give greater wear resistance and a longer productive life.

Cat roller rims are made from forgings to insure maximum strength and uniformity. They are bored and given a controlled heat treatment producing thick, file-hard wear surfaces; the remainder is left tough to resist shock damage.

These rims are shrunk onto cast-iron hubs of high compressive strength and then center welded. This prevents bore distortion and separation. Automatic precision machines finish-bore the roller assemblies. Careful inspection guarantees uniform quality.

Similar Caterpillar quality is built into track roller bearings and shafts, too. A special bronze alloy is used in Cat bearings to support extra-heavy loads. A cast-iron bushing with high compressive strength encloses the bearing.

There is only one way to get maximum production—the production you paid for—from your equipment. Keep your big, yellow machines on the job by using only constantly improved genuine Cat parts. Your Caterpillar Dealer has full information about the new Cat "500" Track Rollers and all the other quality Caterpillar parts. See him today.

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Ask your Caterpillar Dealer about the additional economies provided by 500-hour lubrication periods.

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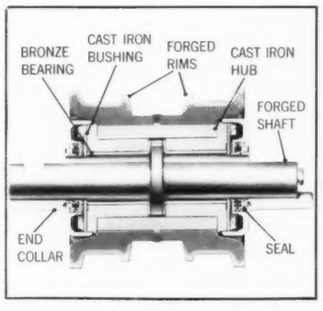

ROLLER CROSS SECTION of Cat "500" Track Roller shows rugged construction. Roller shafts are forged for controlled grain structure, maximum toughness and to permit superior heat treatment. Wear surfaces are hardened to a depth of at least 3/32", leaving a tough, strong core.

TOUGH JOBS, like the one pictured above, play havoc with any but the best track rollers. Here's what happened on an actual job: New Cat rollers were installed on the right side of a tractor; another brand of rollers on the left side. After 668 work hours, seals and bearings of two of the other brand rollers failed. They broke up and were lost from the roller shell. The Cat rollers showed normal wear and the 500-hour lubrication proved its value. Owners everywhere are proving that it pays to standardize on Caterpillar—equipment *and* parts.

For more facts, use Request Card at page 18 and circle No. 361

This Michigan helped level 1,800 cu. yards of sand hourly; 850,000 cu. yards per month.

"A major improvement for sand work"

Utah Construction Company buys their second Michigan Dozer

Last fall, Utah Construction Company tried—and bought—their first Michigan Tractor Dozer. A four-wheel-drive Model 380.

They *could* have bought either of two smaller Michigan Dozer models, 162 or 262 hp . . . but the Model 380, its working weight of 75,000 lbs and its 14 ft blade best fit their needs.

First assignment for this big rig was on one of the biggest, toughest, most spectacular jobs in the country . . . the $17,000,000 expansion of Oakland's International Airport. Job involved filling in of 14,100,000 yds of ocean-bottom sand. Contractors faced the usual problems with sand: how to keep production up and machine repair costs down.

Michigan's 25 mph mobility enabled the machine to quickly handle jobs scattered all over the 7 mile reclamation site.

Doubles production

In answer to these demands, the new Michigan was a rousing success! The fast-moving, power-shifted, torque converter rig regularly spread 1½ to 2 times as much material as each 50,000-lb class crawler, also on the job. Pushes ranged up to 300 ft, often had to be made through salt water axle deep.

Tracks last 6 weeks between overhauls . . . tires 2 years

Naturally, the sand footing and corrosive sea water wreaked its usual havoc on crawler tracks. Complete rebushing and new pin jobs were required on each tractor *every six weeks*. The cost of parts, repair labor *and lost production* was staggering. To the normal hourly costs of operation, these lost time factors added $1.4 per hour! Or about $11,760 per tractor per 6 week period.

In contrast, Michigan tire repairs cost $0.00.

Other than inflation, the tires needed no care. Tread still looks like new . . . should, say Utah Construction Company officials, outlast tracks in fine sand like this, at least 20 to 1.

Is it any wonder, with a tire-over-tracks repair and production record like this, that Utah Construction Company has bought a second high-speed Michigan Tractor Dozer?

Or that they own five other Michigans?

If any of *your* work is in sand, you may find similar economies by switching to rubber-tired Michigan Dozers. Let us put a demonstrator on your job so you can make *your own* rubber vs. tracks comparisons. Call us today for a no-obligation try-out.

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